

CALIFORNIA INSTITUTE OF TECHNOLOGY

EARTHQUAKE ENGINEERING RESEARCH LABORATORY

CASE STUDY OF THE COLLAPSE OF A WATER TANK

BY

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Abstract

A 48.76m high water tank with the supporting steel lattice comprising 5 segments with uniform member configuration is conceived. Its collapse behavior is investigated through a suite of ground motion analyses. First, the tank is analyzed under 13 three-component ground motion records from the Chi-Chi and Hokkaido earthquakes. It is shown that the tank always collapses in the same manner as a result of overturning due to $P - \Delta$ instability resulting from column and brace buckling in the bottom segment. This is the consequence of the uniform member sizing in each of the five segments of the supporting lattice. Incremental dynamic analyses are performed using the Takatori near-source record from the 1995 Kobe earthquake. It is shown that the structure collapses at a ground motion scaling factor of 0.32. The FRAME3D model of the tank reveals severe buckling in the bottom mega-columns and one of the two braces on the west face of the tower when the structure is hit by the Takatori near-source pulse, resulting a tilt in the structure. This is followed by sequential compression buckling of braces on the south and north faces leading to $P - \Delta$ instability and complete collapse of the tank. To aid in the evaluation of the collapse-prediction capability of competing methodologies, detailed results (time-history plots as well as ordinates of crests and troughs in these histories) are provided for the analysis at 0.32 scaling.

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Chapter 1 Water Tank Description

The water-tank presented here (Figure 1.1) is a fictional structure that has not been designed according to any code, but is configured such that its collapse is always triggered by element buckling in the same region of the supporting lattice when excited by any “collapsogenic” ground motion. In the absence of an analytical solution for the collapse mechanism, the best alternative for a low-complexity benchmark problem¹ is one where the collapse mechanism can be inferred from basic structural mechanics principles. Given the characteristic nature of its collapse mechanism, the case study presented here could serve as a candidate for such low-complexity benchmarking. The tank is 160' (48.76m) high and has a capacity of 66390 cu.ft. (1880 cu.m.). The total weight of the structure is 6248 Kips (27802 kN) which includes a full tank of water, a 16" (406mm) thick concrete floor slab, a 12" (305mm) thick concrete roof slab, a 12" (305mm) thick concrete tank wall, and the weight of the steel frame. The supporting lattice consists of five 320" segments (labeled 1–5 in the figure) over its height, with four sloping mega-columns interconnected by beams and X-braces forming a rigid spine. In addition to these elements in near-vertical planes, horizontal diagonal elements (X-braces) are provided at 320" (8128 mm) height intervals. They serve to provide lateral stiffness and strength for wind and earthquake resistance, as well as lateral support to the four columns. The four mega-columns are made of B30x30x0.625 tube sections (the non-standard symbol “B” is used to indicate that nominal dimensions and not the true dimensions are used in the model) with depth and width of 30" (762 mm), and wall thickness of 0.625" (15.875 mm); the beams and braces are made of B14x14x0.625 tube sections; and the horizontal diagonals are made of B12x12x0.5 tube sections. The horizontal and vertical X-braces are assumed to not be connected at the intersection points (and hence there is no restraint to in-plane or out-of-plane buckling at these points). The water-tank floor and roof are two-way slabs that are supported by two trusses in either direction. The elements of the truss (floor and roof beams that form the top and bottom chords of the trusses, perimeter stub columns, and vertical braces) are made of B20x20x0.625 sections. All sections are assumed to be of ASTM-A501 steel with a yield stress of 46 Ksi (317.16 MPa) and an ultimate stress of 58 Ksi (399.90 MPa). Full continuity is assumed at all the connections and a fixed boundary condition is assumed for the base of the water-tank. Due to the structural symmetry, the periods corresponding to the two orthogonal fundamental translational modes is 1.31s, whereas the period of the first torsional mode is 0.72s. If the mass of the members is neglected and all the mass is assumed to be concentrated in the tank portion of the structure, then the structure can be idealized as a 3 degree-of-freedom system (mass translation in X, Y and Z directions). The motion of the mass would lead to overturning moments that are greatest at the base of the tank. So the mega-columns at the bottom are the

¹Benchmark problems for collapse must be formulated at multiple levels of complexity in order to systematically evaluate the capabilities of collapse prediction methodologies. At low complexity, the collapse mechanism may be known and comparisons may be made on the times and modes of local failures that result in the global collapse. Higher levels of complexity would test progressively harder collapse modeling features such as partial fixity of connections, foundation compliance, soil-structure interaction, modeling uncertainty, construction quality uncertainty, out-of-plane buckling of the diagonal X bracing as a result of being connected at the brace intersection point, low-cycle fatigue and fracture, etc., as well as structures with multiple global collapse modes.

most stressed; even though the outward flare in the columns increases the lever arm to resist the overturning moment, it is not sufficiently large to make up for the increase in the overturning moment over the height of the tower. At the same time, the bottom columns have slightly longer clear spans when compared to the upper columns. This is because the upper columns have finite-sized joints at both their ends, whereas the bottom columns have finite-sized joints only at the top, with the bottom end being connected to a base plate at elevation zero (see Figure 1.1). The sloping columns also result in longer spans and shallow angles for the bottom braces. Maintaining the size of all columns and braces constant would then necessarily ensure that the collapse of the tank always occurs due to column and brace buckling in the bottom segment (Segment 1) and subsequent overturning due to $P - \Delta$ effects.

To demonstrate this, a FRAME3D [2] model of the tank using modified elastofiber (MEF) elements [3, 4] for all the steel members ($\sigma_y = 46$ Ksi (317.16 MPa), $\sigma_u = 58$ Ksi (399.90 MPa), $E_{sh} = 580$ Ksi (3998.96 MPa), $\epsilon_{sh} = 0.012$, $\epsilon_u = 0.16$, minor and major direction eccentricity of $5 \times 10^{-6}L$) is subjected to 13 three-component records from the 21 September 1999, magnitude 7.7 Chi-Chi earthquake in Taiwan, and the 25 September 2003, magnitude 8.3 Tokachi-Oki earthquake in Japan, scaled by a factor of 3. Response spectra of the north and east components of the unscaled version of these records are given in [6]. While panel zone deformation is neglected (joints assumed rigid) in the water-tank model, the finiteness of the joints is taken into account. Rayleigh damping coefficients are computed with a desired amount of 2% damping at periods of 5.0s and 0.5s. Although the fundamental period of the tank is 1.31s, the period may lengthen significantly as the supporting structure gets damaged, hence the choice of 5s and 0.5s to constrain the Rayleigh coefficients. A time-step size of 0.005s is used for the ground motion analyses. The Constant Average Acceleration method (Newmark's method with $\gamma = 0.50$ and $\beta = 0.25$) is used for time integration. The concrete roof and floor slab of the tank are modeled using plane-stress elements (Young's modulus, $E = 3605$ Ksi (24855.60 MPa), and Poisson's ratio, $\nu = 0.20$). The model consists of 44 node points, 144 MEF elements, and 18 plane-stress (diaphragm) elements. Mass is lumped at the node points. The model collapses in all but three cases (scaled records at stations HKD100, HKD112, and HKD 113, from the Tokachi-Oki earthquake). To isolate the region with the greatest damage, the relative vertical (Z) displacement of the top and bottom of each segment normalized by the segment height is shown plotted in Figure 1.2. The "drifts" computed using displacements at each of the four mega-column locations (south-west: se, south-east: se, north-west: nw, and north-east: ne) indicate that most of the relative vertical deformation is concentrated in the bottom segment (Segment 1). In all instances of collapse, the upper structure simply undergoes a free-fall caused by column and brace buckling in Segment 1.

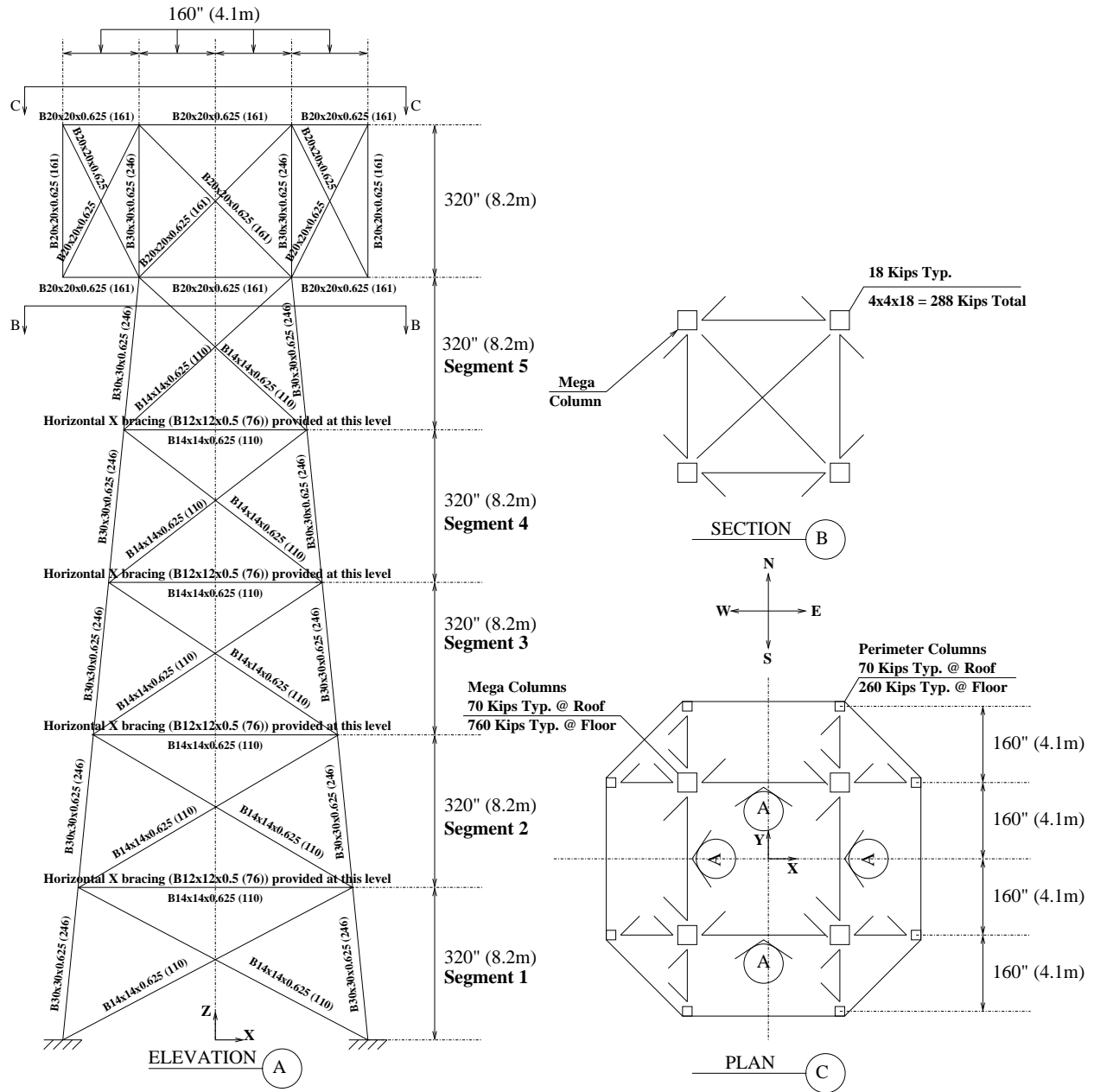


Figure 1.1: Structural plan, section, elevation, and member sizes of the water-tank for the proposed collapse benchmark problem. Note that the X-braces are assumed not to be connected at the intersecting point. Also shown are the loads imposed in the model, which add up to 6248 Kips (lattice: 18x4x4 + tank floor: 760x4 + 260x8 + tank roof: 70x12 Kips).

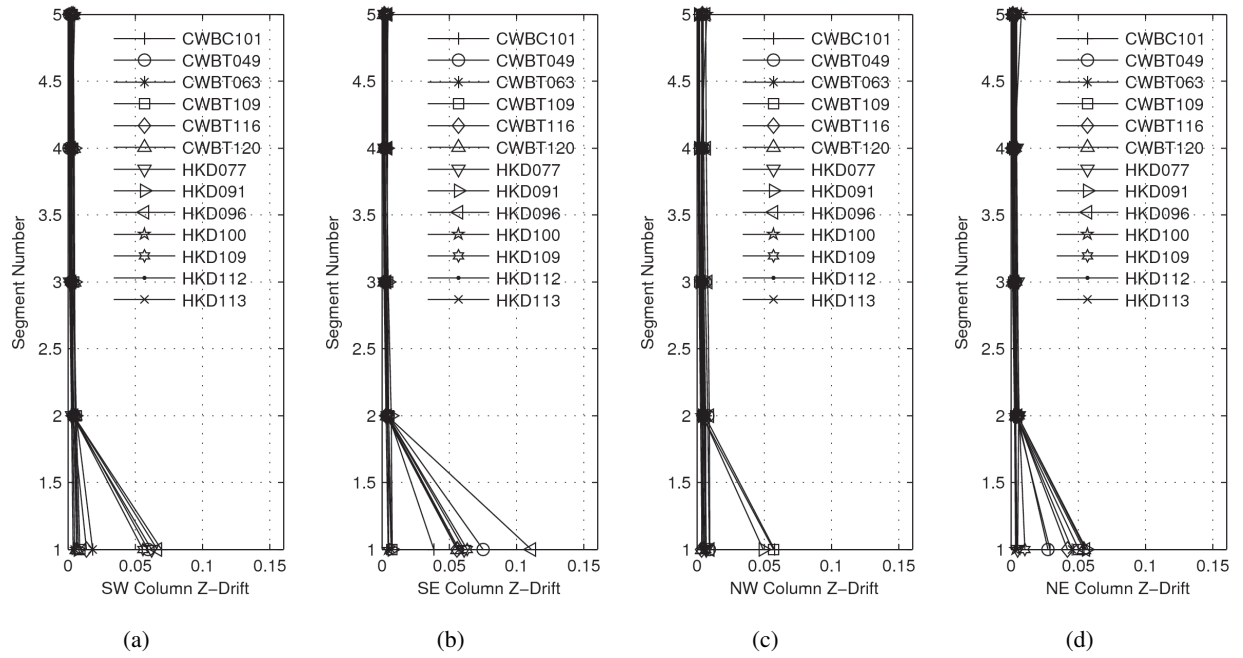


Figure 1.2: Peak normalized Z direction drift in each of the five segments of the water-tank when subjected to 13 records from the 1999 Chi-Chi and the 2003 Hokkaido earthquakes scaled by a factor of 3. Note that most of the deformation is accommodated in the bottom-most segment in all the cases that evoke significant response in the tank.

Chapter 2 Incremental Dynamic Analysis Using the Takatori Record

Incremental dynamic analyses are performed on the water-tank model using the Takatori station near-source record from the January 17, 1995 $M_w = 6.9$ Kobe earthquake. The three-component record is scaled down by a factor ranging between 0.04 and 1.00, at 0.04 increments, and used to excite the FRAME3D model of the tank. Shown in Figure 2.1 are the global X, Y, and Z direction peak absolute resultant forces in each of the five segments of the tank as a function of the scaling factor. There is a monotonic increase in the peak lateral (X and Y) forces carried by all the segments up to a scale factor of 0.32. Beyond this, the stiffness forces saturate, suggesting that this is the collapse threshold for the tank. Peak drifts in the X, Y, and Z directions as a function of the ground motion scaling factor are shown plotted in Figures 2.2, 2.3, and 2.4, respectively. Beyond the scaling factor of 0.32, the drift in Segment 1 is distinctly different from that in the upper segments. Column buckling in the SW and NW columns of Segment 1, along with brace buckling on the northern, southern, and western faces of the segment, causes differential “settlement” within Segment 1 (e.g., Figure 3.6). This results in a tilt of the upper structure inducing a large $P - \Delta$ moment. The structure collapses in a mixed mode (e.g., Figure 3.8), combining the vertical, but asymmetric, free-fall of the upper structure through the bottom segment, with the overturning of the upper structure. Thus, the Z drift of Segment 1 is greater than that of the upper segments. Note that the drift is the relative displacement between points at the top and bottom of a segment normalized by its height.

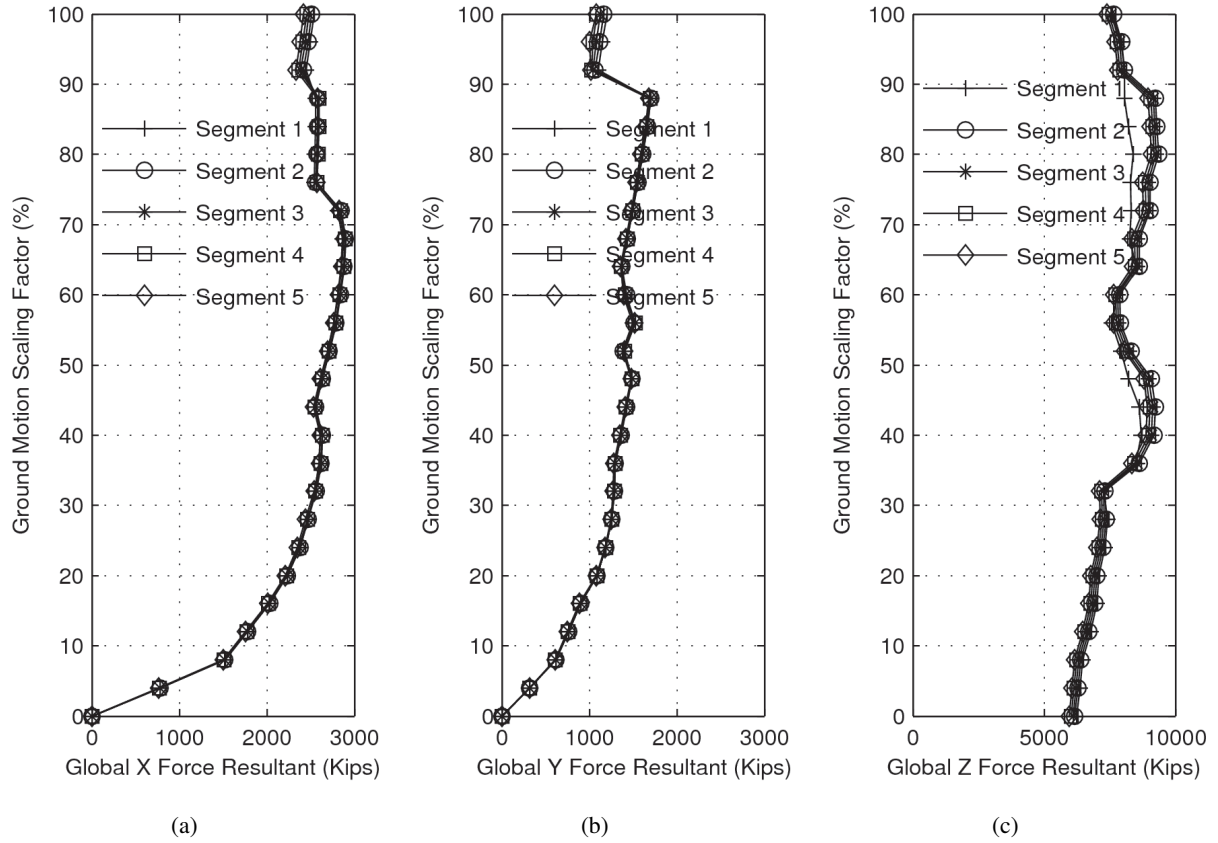


Figure 2.1: Peak absolute resultant forces in each of the five segments of the water-tank under incremental dynamic analysis using scaled Takatori records: (a) Global X direction. (b) Global Y direction. (c) Global Z direction (vertical).

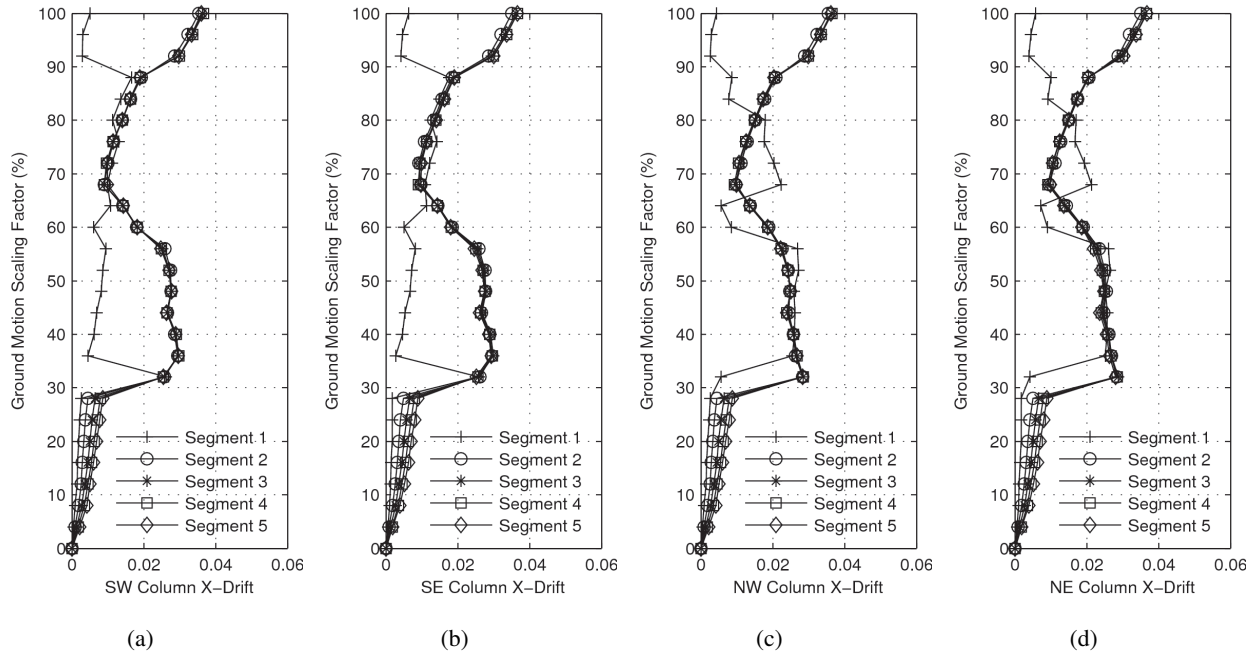


Figure 2.2: Peak normalized X direction drift in each of the five segments of the water-tank under incremental dynamic analysis using scaled Takatori records. The lateral drift is caused not just by lateral sway, but also by tilting of the tank and the supporting tower as a rigid body about the point of damage concentration. However, above this “hinge point”, the relative deformation between the top and bottom of each of the segments due to rigid body rotation would be identical. Thus if we notice near-identical X direction drifts in certain segments, then we can conclude that the damage concentration region does not occur in these segments. Based on this reasoning, we can conclude that all the damage leading to collapse of the tank is concentrated in the bottom-most segment.

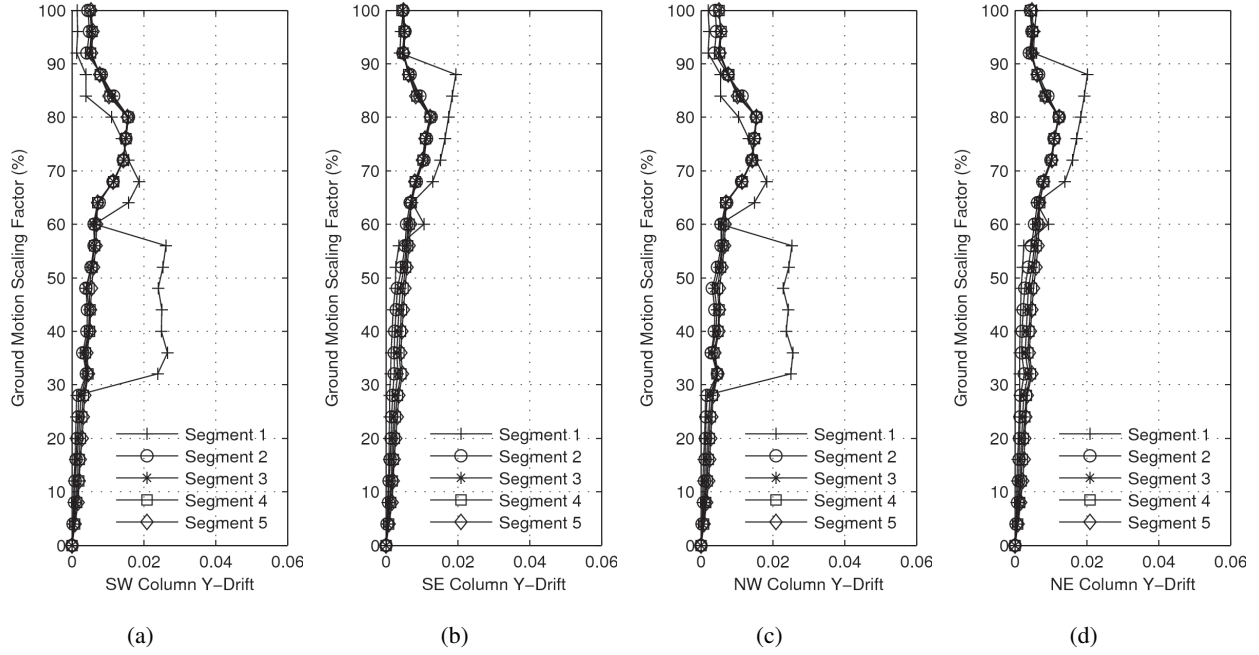


Figure 2.3: Peak normalized Y direction drift in each of the five segments of the water-tank under incremental dynamic analysis using scaled Takatori records. As for the X direction, the lateral drift for Segment 1 is significantly different from the uniformly drifting upper segments demonstrating once again that the damage leading to collapse of the tank is concentrated in the bottom-most segment.

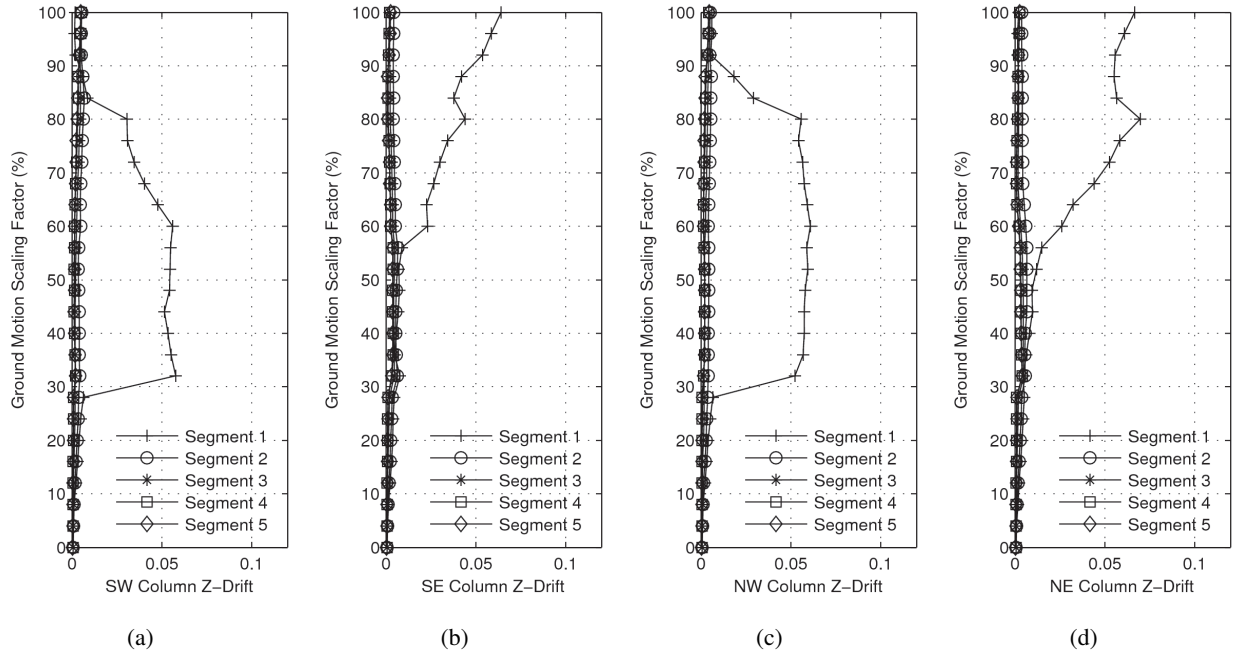


Figure 2.4: Peak normalized Z direction drift in each of the five segments of the water-tank under incremental dynamic analysis using scaled Takatori records. The relative deformation between the top and bottom of segments 2-5 is minor when compared to that of segment 1, demonstrating that most of the downward displacement as the tank collapses (scaling factor > 32%) is the result of damage in the bottom-most segment.

Chapter 3 Benchmarking Using the Takatori Record Scaled by a Factor of 0.32

For benchmarking purposes, detailed results from the analysis of the FRAME3D model of the tank subjected to the Takatori record scaled down by a factor of 0.32 are presented (including response history plots and the ordinates of the crests and troughs in these histories). 5.6 s or so into the record, the forward phase of the largest near-source pulse initiates buckling, though just barely, in the bottom mega-column at the north-east corner (Figures 3.9 and 3.10). Before buckling can progress, ground velocity changes direction and the structure is stabilized. However, the reverse phase of the same ground motion pulse induces severe buckling on both bottom mega-columns on the west face of the tower (again see Figures 3.9 and 3.10), followed almost instantaneously by bottom brace buckling on one of the braces of the west face (Figures 3.11, 3.12, and 3.13). Multiple fibers rupture in the two buckled mega-columns starting at 6.34 s. Fibers in the middle segment rupture first, followed by fibers in the end segments. The asymmetric buckling of columns and brace on the west face results in a tilt in the structure (Figure 3.6). Subsequent shaking causes the braces on the south and the north faces of the tower to buckle sequentially at 9.6 s, 12.5 s, and 14.35 s (Figure 3.11). The loss of lateral force-resisting capacity due to buckling of the braces results in excessive $P - \Delta$ effects and causes the water-tank to collapse. Snapshots of the collapsing water-tank are shown in Figures 3.1 - 3.8. At time 16s, the stiffness matrix becomes so ill-conditioned that the program is unable to follow the collapse of the structure any further.

The drifts within each segment in the global X and Y directions are given in Figure 3.14. From these plots, it is hard to deduce that all the damage is restricted to Segment 1. Since the structure collapses under significant overturning, the lateral drifts in the upper segments are not insignificant. This is not the case with the “vertical (Z) drift”. The Z direction drifts for Segment 1 far exceed that of the upper segments (Figure 3.15), indicating that significant buckling is occurring in this segment, causing the upper structure to undergo free-fall while remaining virtually intact. Unlike the drift response histories where there are no zero crossings as the structure collapses, period-lengthening can be observed in the global X and Y force resultant histories of all the segments [Figure 3.16(a)]. The EW period lengthens from 1.31 s to about 2 s, whereas the NS period lengthens from 1.31 s to about 1.7 s. The segment global Z force histories shown in Figure 3.16(b) are also instructive. When the water-tank is stable, the only differences in vertical forces carried in all the five segments of the supporting structure arise from the self-weight of the frame. This holds true until about 15.5 s into the record, at which point there is sudden and swift degradation of the vertical load carrying capacity of Segment 1, and it is not able to transfer the load imposed from above to the ground, resulting in eventual free-fall of the upper structure. The displacement response histories of the SW and NE corners of the roof are given in Figure 3.17. The peak displacements of the SW corner at stiffness ill-conditioning are -66.7” (-1694 mm) in the X (East) direction, +1.1” (+28 mm) in the Y (North) direction, and -18.8” (-478 mm) in the Z (Up) direction. The corresponding numbers for the NE corner are

-43.3" (-1100 mm), -2.8" (-71 mm), and -6.6" (-168 mm), respectively. This represents a 3.5% peak lateral tilt in the tower beyond which FRAME3D is unable to follow the structural path to collapse. The other metric of interest in relation to FRAME3D's performance is the execution time. Shown in Figure 3.18 is the execution time taken for the incremental dynamic analysis using the Takatori record as a function of the ground motion scaling factor. The analyses were conducted on a high-performance computing cluster, but in an embarrassingly parallel fashion, with each analysis performed on a single core of a Dell PowerEdge 1950 (dual quad core) with a clock-speed of 2.33 GHz and 8 GB memory. Also shown in the figure is the corresponding analysis time to stiffness ill-conditioning. A few other response histories from the scaled Takatori analysis can be found in [3].

An animation of the tank response can be found online [1], while the FRAME3D model can be accessed at the Caltech Virtual Shaker scientific gateway [5]. Nonlinear time-history analysis using FRAME3D can be performed remotely on the model through this gateway. The unscaled Takatori ground motion record is also accessible through the VirtualShaker's ground motion database.

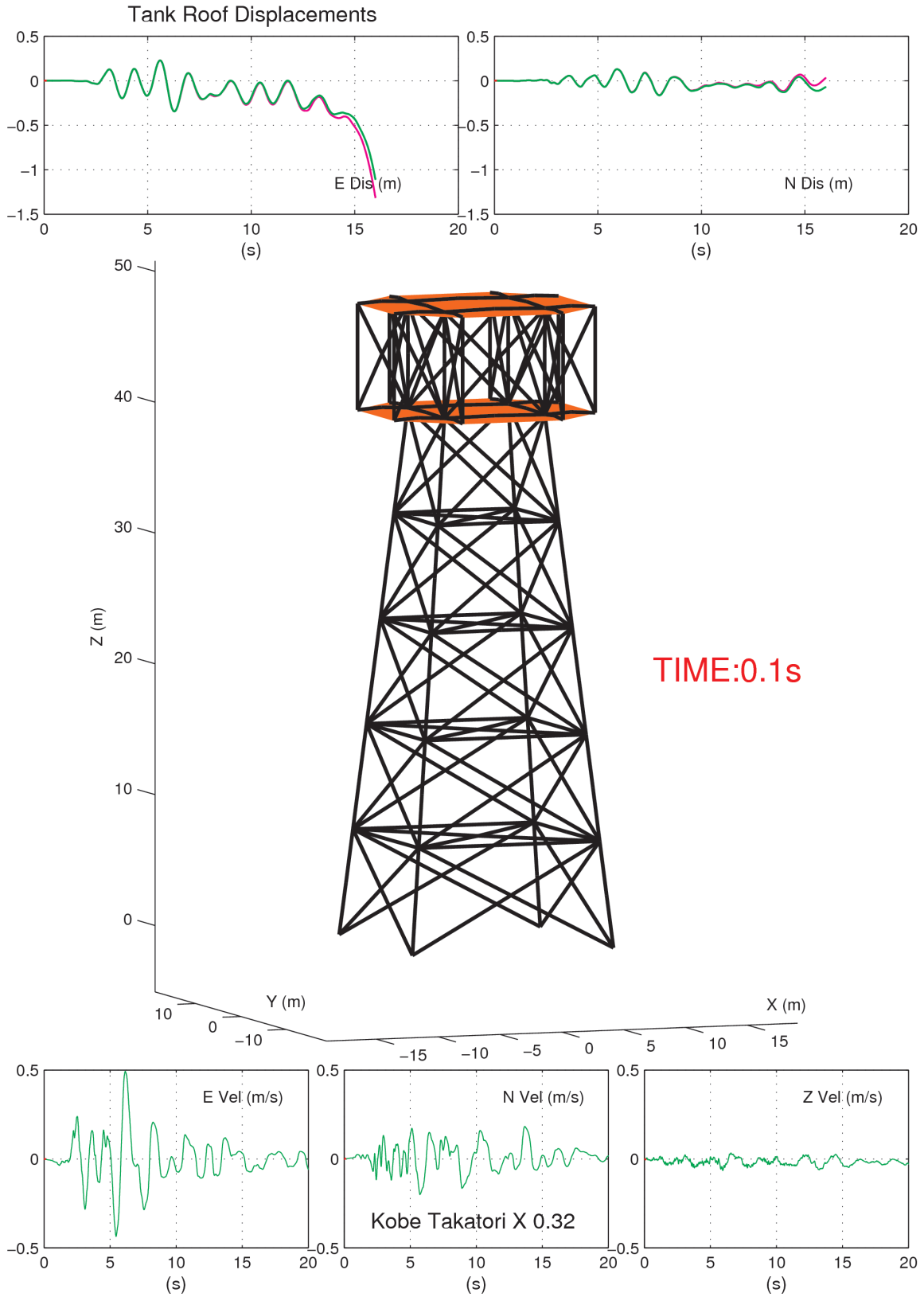


Figure 3.1: Undeformed shape of the collapsing benchmark steel braced water-tank subjected to the 1995 Kobe earthquake Takatori record scaled down by a factor of 0.32.

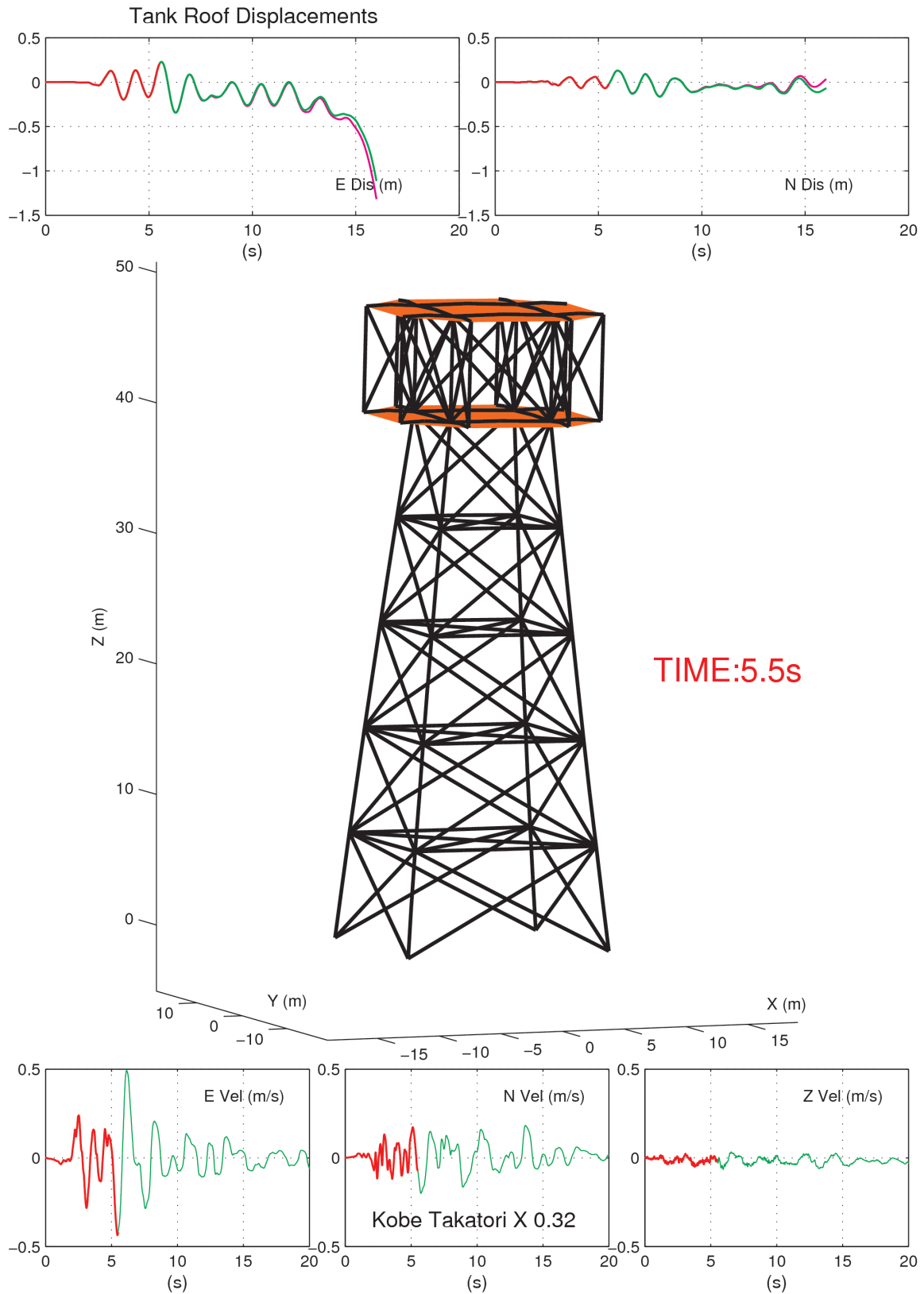


Figure 3.2: 5.5s snapshot of the collapsing benchmark steel braced water-tank subjected to the 1995 Kobe earthquake Takatori record scaled down by a factor of 0.32. Deformations are exaggerated by a factor of 5.

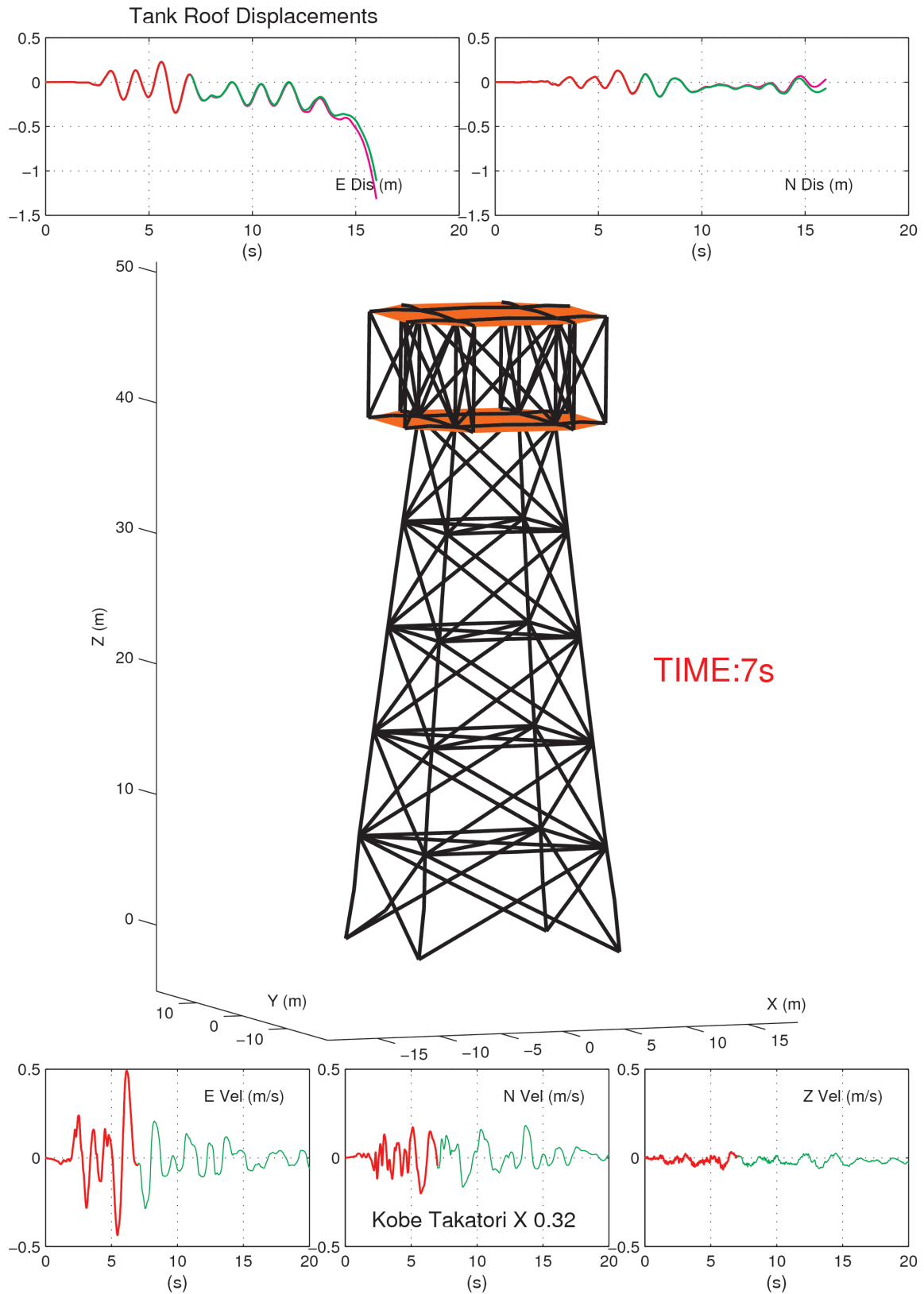


Figure 3.3: 7s snapshot of the collapsing benchmark steel braced water-tank subjected to the 1995 Kobe earthquake Takatori record scaled down by a factor of 0.32. Deformations are exaggerated by a factor of 5.

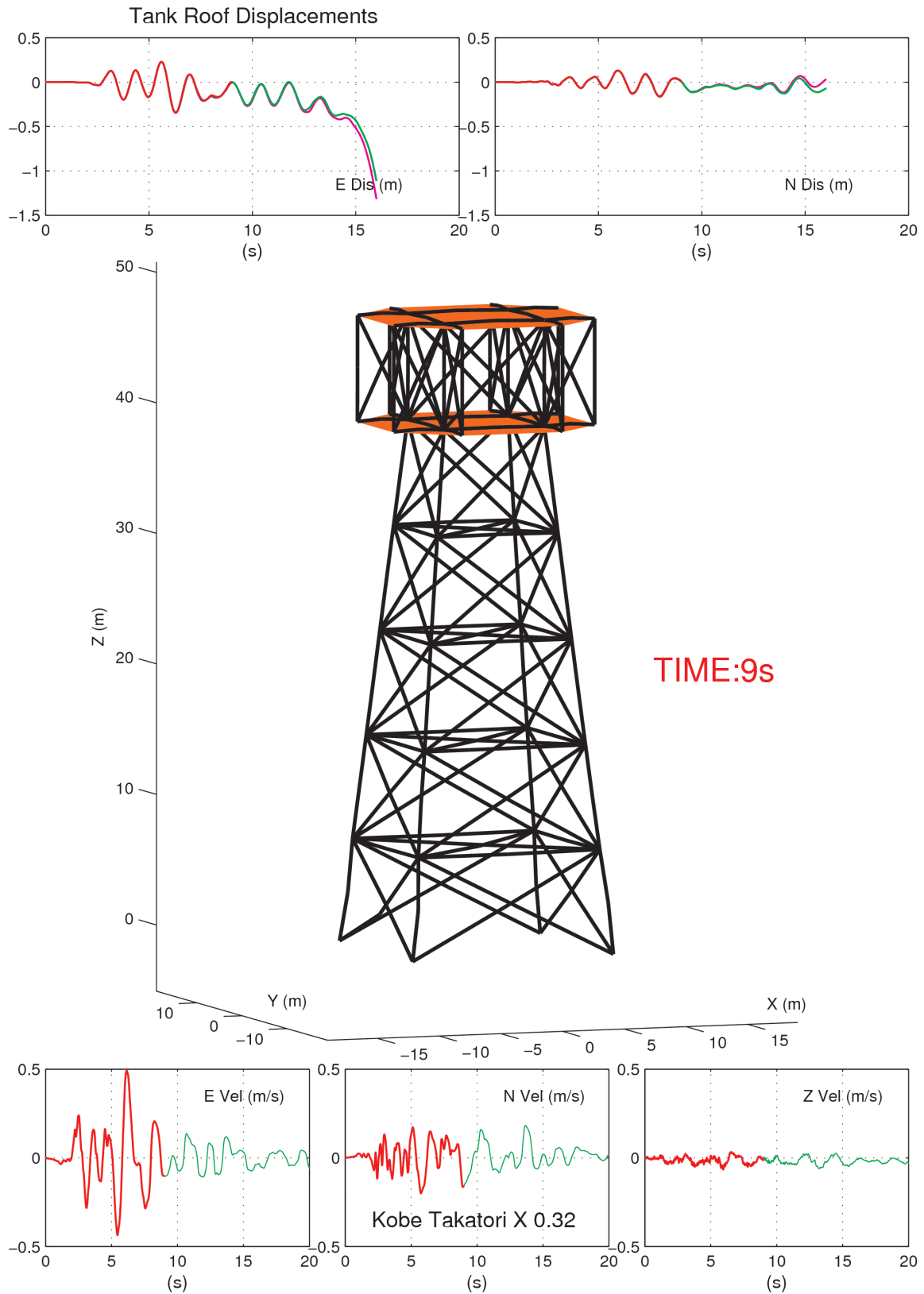


Figure 3.4: 9s snapshot of the collapsing benchmark steel braced water-tank subjected to the 1995 Kobe earthquake Takatori record scaled down by a factor of 0.32. Deformations are exaggerated by a factor of 5.

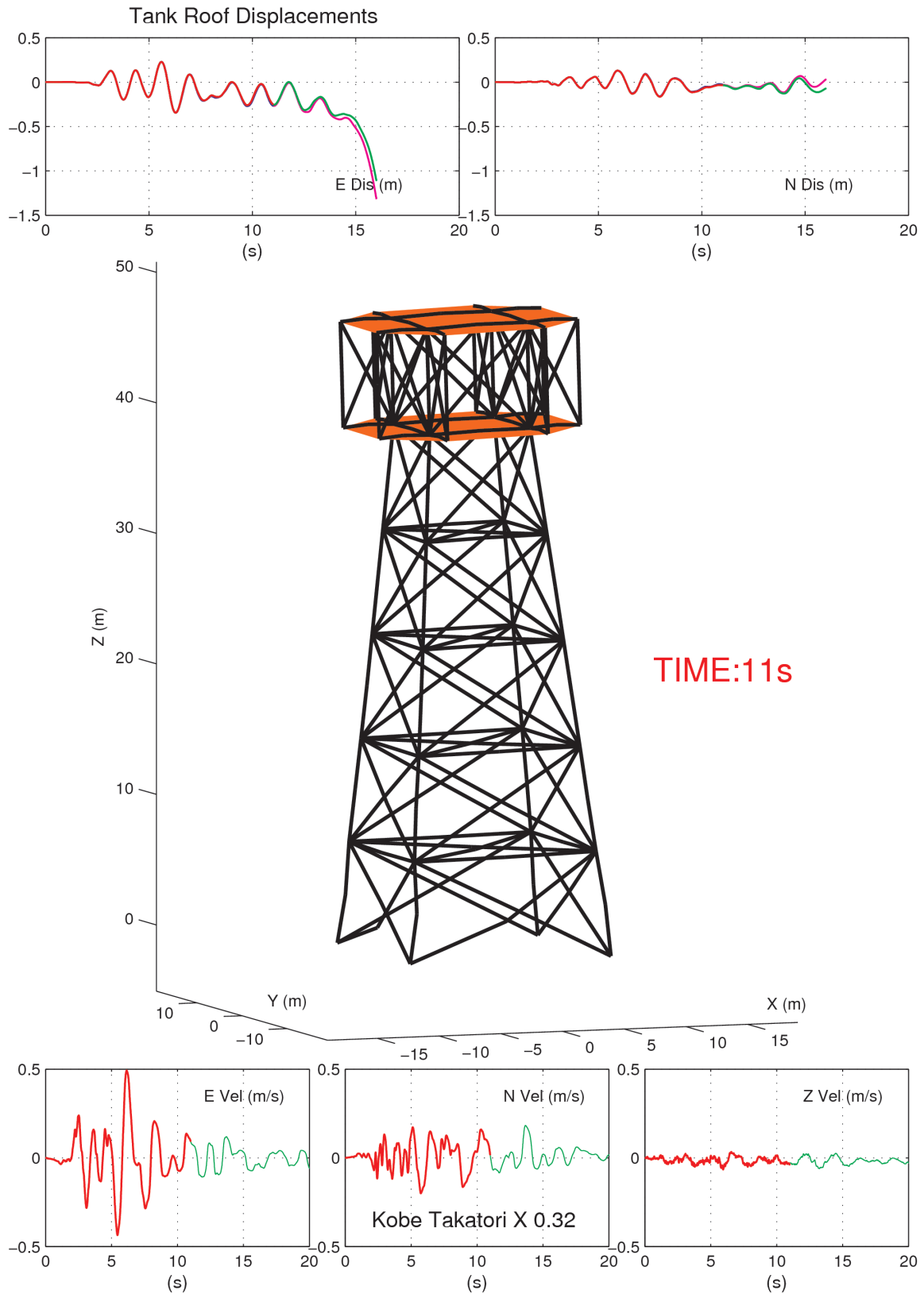


Figure 3.5: 11s snapshot of the collapsing benchmark steel braced water-tank subjected to the 1995 Kobe earthquake Takatori record scaled down by a factor of 0.32. Deformations are exaggerated by a factor of 5.

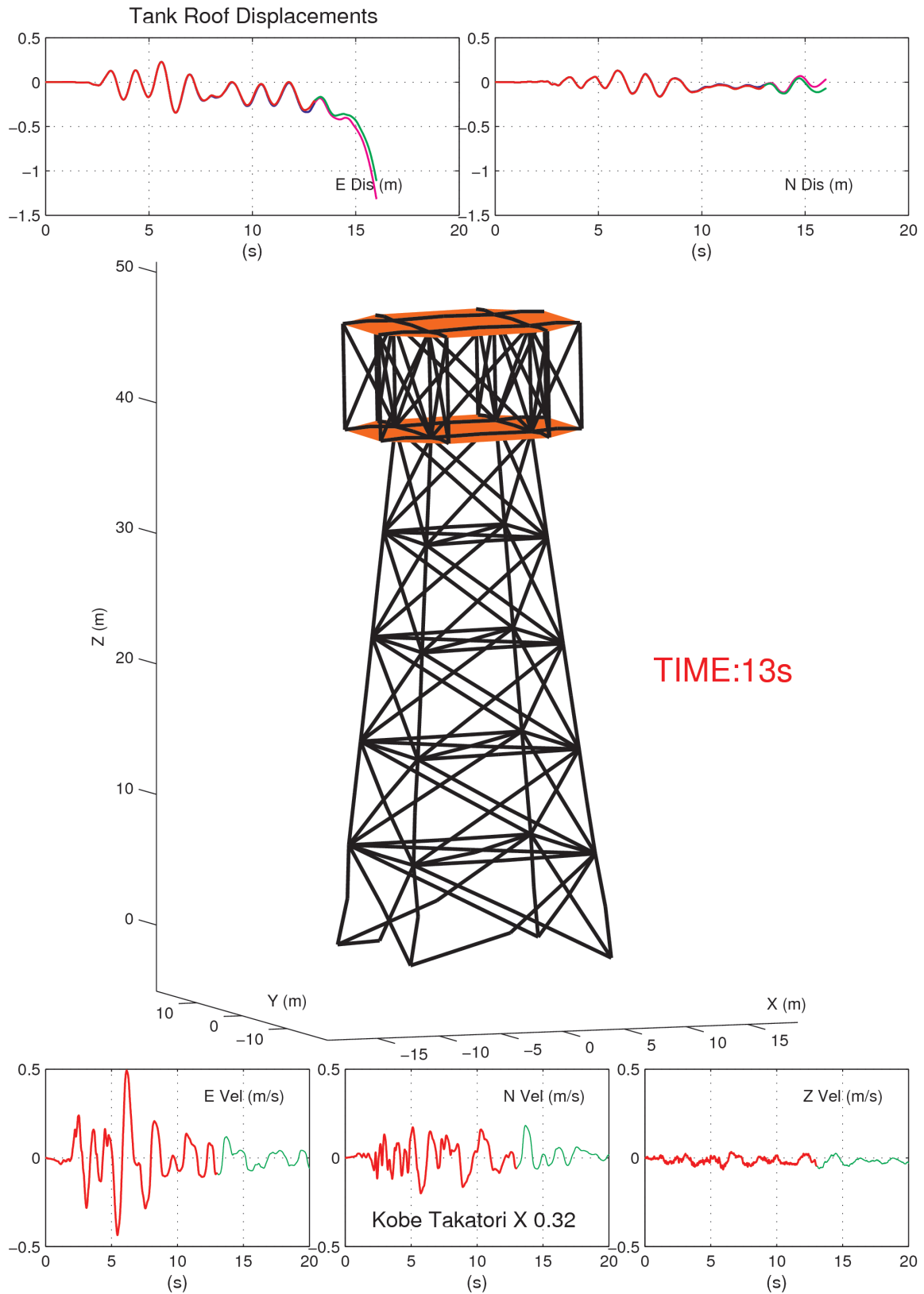


Figure 3.6: 13s snapshot of the collapsing benchmark steel braced water-tank subjected to the 1995 Kobe earthquake Takatori record scaled down by a factor of 0.32. Deformations are exaggerated by a factor of 5.

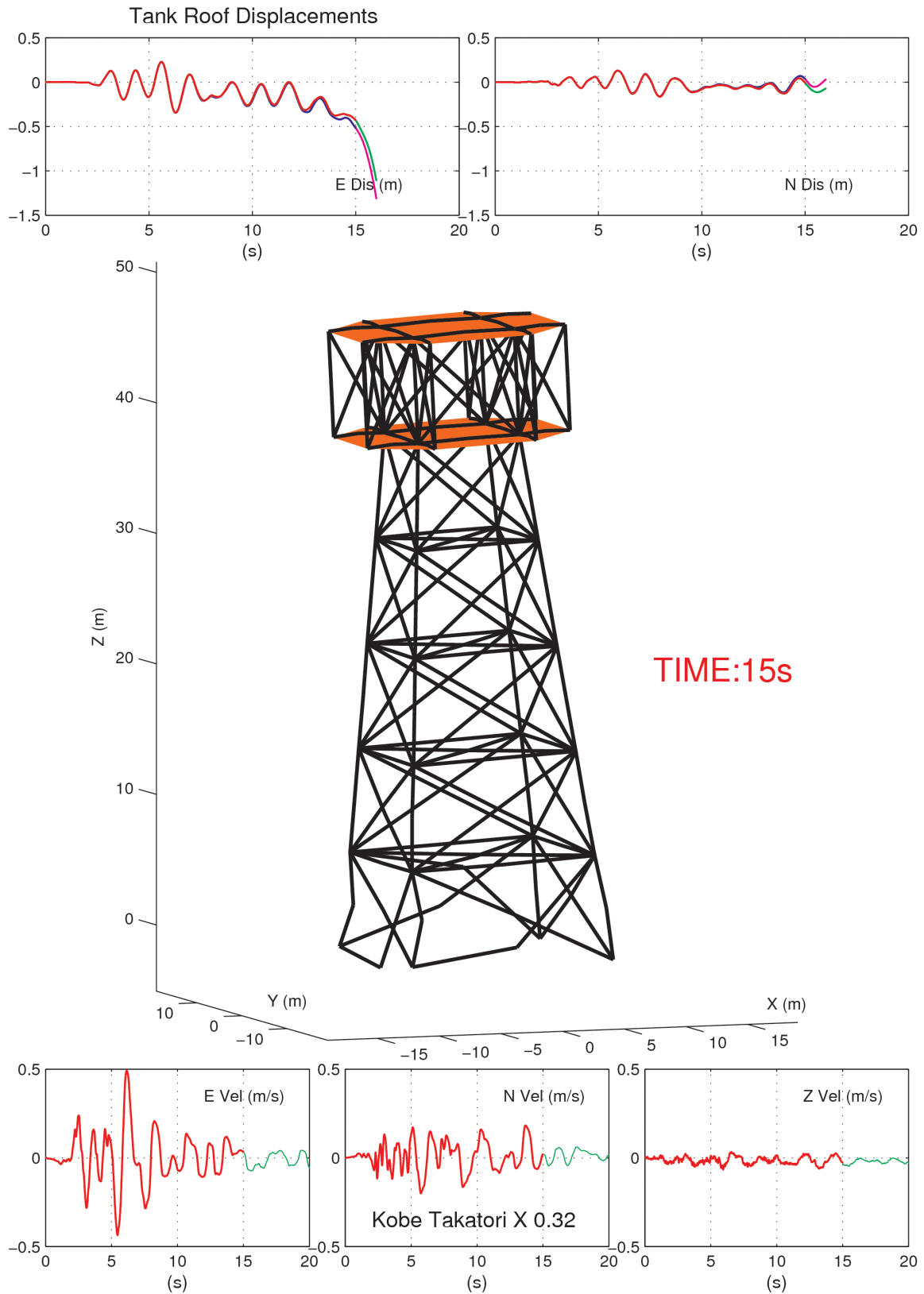


Figure 3.7: 15s snapshot of the collapsing benchmark steel braced water-tank subjected to the 1995 Kobe earthquake Takatori record scaled down by a factor of 0.32. Deformations are exaggerated by a factor of 5.

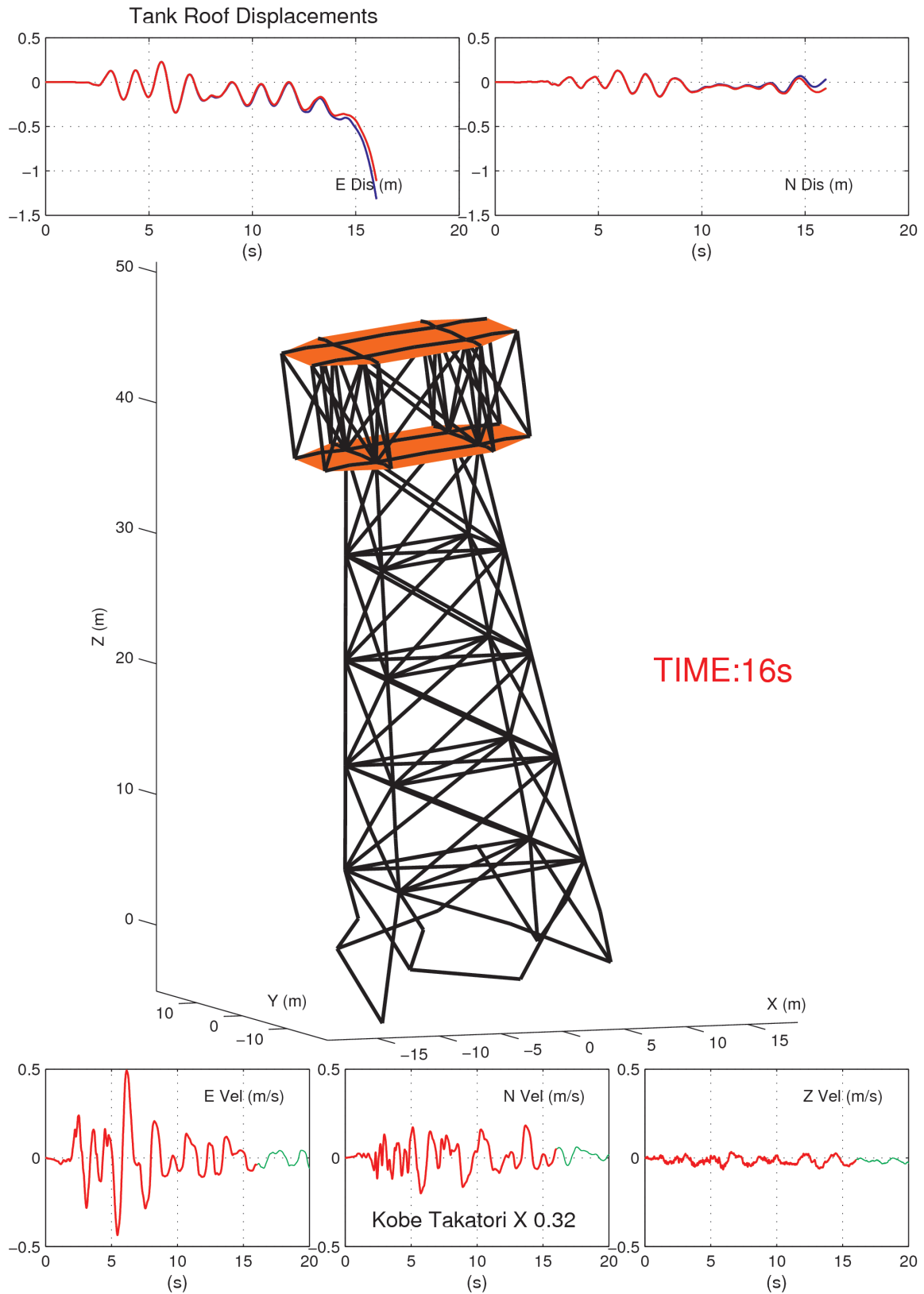
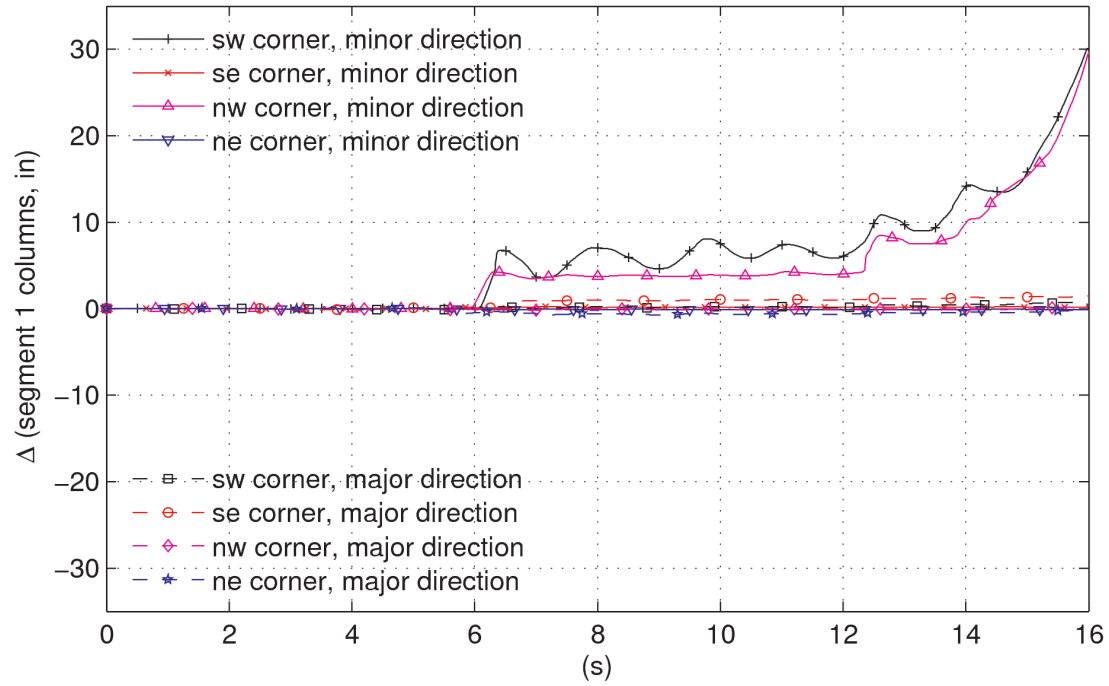
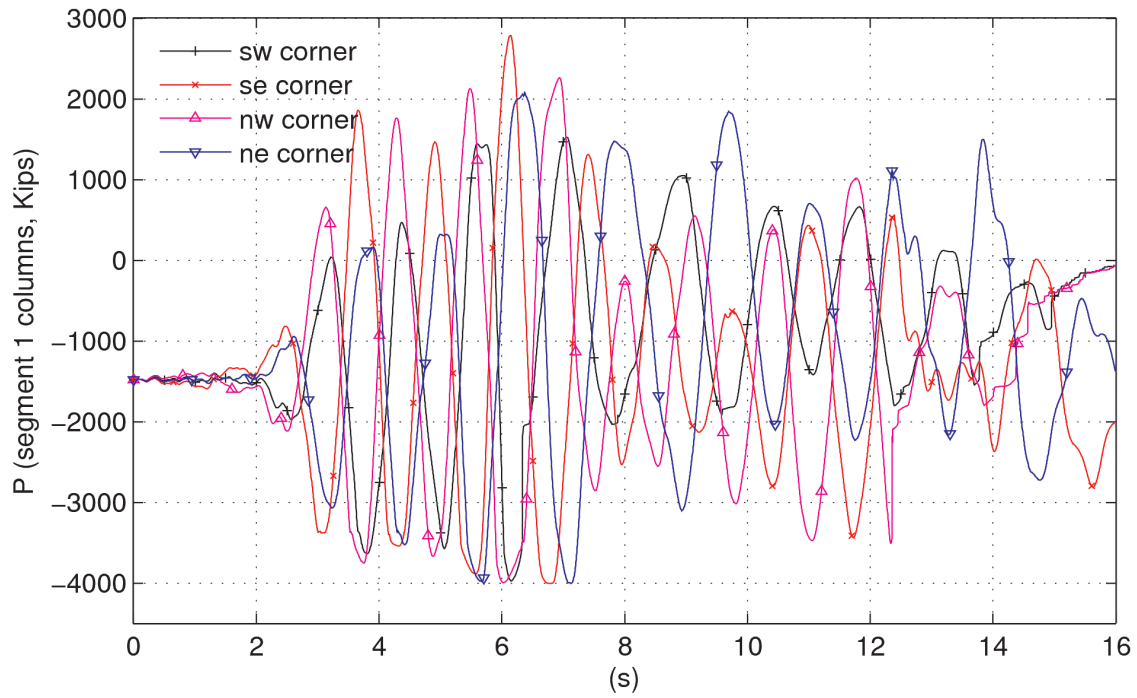


Figure 3.8: 16s snapshot of the collapsing benchmark steel braced water-tank subjected to the 1995 Kobe earthquake Takatori record scaled down by a factor of 0.32. Deformations are exaggerated by a factor of 5.



(a)



(b)

Figure 3.9: Time histories of minor and major direction lateral deformation (a) and axial forces (b) in the base (Segment 1) mega-columns at the four corners (south-west: sw, south-east: se, north-west: nw, and north-east: ne) of the water-tank under the Takatori ground excitation scaled down by a factor of 0.32.

Time	Maximum	Time	Minimum
0.0050	0.00293780	0.0200	0.00293770
0.0400	0.00294000	0.0800	0.00290150
0.1100	0.00291500	0.1450	0.00288560
0.1750	0.00289520	0.3950	0.00267620
0.4100	0.00267940	0.5750	0.00254740
0.6000	0.00255120	0.7100	0.00248170
0.7200	0.00248210	0.7750	0.00240190
0.8050	0.00242910	0.8350	0.00239690
0.8550	0.00240960	1.0350	0.00174610
1.0550	0.00175010	1.0850	0.00173250
1.3850	0.00327710	1.4000	0.00326650
1.5900	0.00489930	1.7850	0.00406500
1.8450	0.00421580	1.9950	0.00336630
2.2050	0.00737440	2.3300	0.00406870
2.4600	0.00909480	2.6350	-0.00222930
2.7200	-0.00165680	2.9350	-0.01264700
3.0800	-0.00651940	3.1500	-0.00774050
3.6150	0.02970400	3.6300	0.02963300
3.6400	0.02995100	3.6550	0.01970400
3.6600	0.01997600	3.6750	0.01517300
3.6950	0.05206000	3.7250	0.03453800
3.7400	0.03466700	3.7600	0.03403400
3.7850	0.03471300	4.1150	0.00144120
4.8050	0.05456100	5.2700	0.00326800
5.9700	0.08230800	6.0350	0.07873200
6.4350	6.76290000	7.0600	3.55890000
7.9100	7.07020000	8.9950	4.63500000
9.7850	8.09610000	10.4500	5.84090000
11.0750	7.45360000	11.8300	5.83780000
12.6250	10.85200000	13.2000	9.00170000
14.0600	14.33900000	14.3850	13.61000000
14.4100	13.61800000	14.5700	13.46300000
15.9900	30.12500000	16.0000	29.72900000

Table 3.1: Segment 1 south-west corner column minor direction deformation

Time	Maximum	Time	Minimum
0.0050	0.00293780	0.0200	0.00293770
0.0400	0.00294010	0.0800	0.00290160
0.1100	0.00291570	0.1450	0.00288730
0.1750	0.00289720	0.3900	0.00268110
0.4100	0.00268480	0.5750	0.00255440
0.6000	0.00255770	0.7100	0.00248990
0.7200	0.00249100	0.7750	0.00241090
0.8050	0.00243880	0.8350	0.00240530
0.8550	0.00241840	1.0350	0.00175730
1.0600	0.00176310	1.0850	0.00174700
1.3800	0.00327820	1.4000	0.00326580
1.5900	0.00487560	1.7850	0.00403660
1.8500	0.00419240	1.9950	0.00333810
2.2050	0.00726400	2.3350	0.00395360
2.4550	0.00883680	2.6350	-0.00224290
2.7200	-0.00164520	2.9350	-0.01260900
3.0050	0.00207860	3.0100	0.00178030
3.0450	0.00346950	3.1500	0.00117650
3.5900	0.03043000	4.0800	-0.01611100
4.1500	-0.00539550	4.1600	-0.01053100
4.1900	-0.00703760	4.1950	-0.00744060
4.2200	0.00026664	4.2350	-0.00013025
4.7800	0.04345200	5.2500	-0.00569440
5.3550	0.00978300	5.3800	0.00618950
5.8800	0.15005000	6.4500	0.05624800
6.4700	0.05655700	6.5000	0.05588900
7.1950	0.23359000	7.9250	0.12651000
8.6450	0.20231000	8.7550	0.20075000
8.8750	0.20233000	9.6300	0.13736000
9.6400	0.13738000	9.6850	0.13499000
10.4200	0.17259000	10.5200	0.17166000
10.6050	0.17218000	10.8900	0.16521000
10.9400	0.16544000	11.4650	0.16183000
11.4850	0.16184000	11.5350	0.16176000
11.9950	0.17606000	12.3550	0.16472000
12.4000	0.17048000	12.4300	0.16720000
12.5550	0.17348000	12.5650	0.17345000
12.6000	0.17542000	12.7650	0.16739000
13.2500	0.19801000	13.8300	0.14851000
13.8600	0.14945000	13.8800	0.14931000
14.6200	0.22303000	14.6450	0.22291000
14.6750	0.22298000	15.4850	0.16388000

Table 3.2: Segment 1 south-east corner column minor direction deformation

Time	Maximum	Time	Minimum
0.0050	0.00102420	0.0200	0.00102410
0.0400	0.00102690	0.0800	0.00099182
0.1050	0.00100840	0.1500	0.00097177
0.1650	0.00097234	0.2500	0.00092016
0.2600	0.00092130	0.5700	0.00062587
0.6150	0.00063853	0.7700	0.00048427
0.8050	0.00053372	0.8350	0.00051561
0.8550	0.00053336	1.0300	-0.00017663
1.0600	-0.00016467	1.0850	-0.00017345
1.3800	0.00139840	1.4000	0.00137400
1.5850	0.00299460	1.7450	0.00214710
1.7600	0.00214920	1.7800	0.00213430
1.8450	0.00229070	1.9950	0.00140730
2.2050	0.00535960	2.3300	0.00199530
2.4550	0.00705650	2.6350	-0.00416850
2.7200	-0.00359730	2.9350	-0.01406700
3.0800	-0.00806020	3.1450	-0.00919040
3.5100	0.01821800	3.5350	0.00257800
3.5450	0.00314200	3.5500	0.00247600
3.5950	0.02181000	3.6050	0.02175900
3.6100	0.02176400	3.6400	0.01921400
3.6450	0.01935700	4.0950	-0.03307400
4.7800	0.01766300	5.2500	-0.03324600
5.8750	0.04156100	5.9050	0.04068800
5.9150	0.04264400	5.9250	0.03524400
6.3050	4.25550000	6.3450	4.24180000
6.3600	4.25410000	6.9400	3.46430000
7.5100	3.91710000	7.9800	3.70980000
8.5700	3.89900000	9.2550	3.72660000
9.8200	3.91740000	10.4300	3.77810000
11.0600	4.26510000	11.7700	3.95760000
12.6150	8.49760000	13.1450	7.48550000
13.2900	7.52060000	13.3900	7.50880000

Table 3.3: Segment 1 north-west corner column minor direction deformation

Time	Maximum	Time	Minimum
0.0050	0.00102420	0.0200	0.00102410
0.0400	0.00102680	0.0800	0.00099182
0.1050	0.00100790	0.1500	0.00097002
0.1600	0.00097037	0.2500	0.00091737
0.2600	0.00091836	0.5700	0.00061853
0.6150	0.00063188	0.7700	0.00047487
0.8050	0.00052370	0.8350	0.00050633
0.8550	0.00052385	1.0300	-0.00018880
1.0600	-0.00017920	1.0850	-0.00018942
1.3800	0.00139740	1.4000	0.00137540
1.5850	0.00301330	1.7500	0.00217430
1.7600	0.00217600	1.7850	0.00215990
1.8450	0.00231060	1.9950	0.00143310
2.2050	0.00542770	2.3300	0.00210660
2.4550	0.00717960	2.6350	-0.00404160
2.7150	-0.00358520	2.9350	-0.01484600
3.0750	-0.00975120	3.1500	-0.01122400
3.6100	0.02379700	4.1200	-0.02718200
4.1650	-0.02655900	4.1750	-0.02658700
4.2900	-0.00824640	4.3200	-0.22902000
4.8050	0.02293500	5.2750	-0.02776200
5.4450	-0.02056500	5.4500	-0.02292500
5.4650	-0.02084500	5.5850	-0.05850600
5.9650	-0.02247600	6.6850	-0.11949000
7.0700	-0.06215600	7.0850	-0.06366200
7.2500	-0.05437400	7.9350	-0.14079000
8.6450	-0.05751800	9.5600	-0.12170000
9.6500	-0.11874000	9.6800	-0.11961000
10.4250	-0.09535800	10.4800	-0.09556100
10.7100	-0.08908700	10.7700	-0.08923200
10.9700	-0.08661900	11.6350	-0.10647000
12.1650	-0.09104700	12.3400	-0.09207900
12.4000	-0.08579600	12.4300	-0.09010900
12.4650	-0.08815600	12.5650	-0.09235600
12.6000	-0.09030300	12.7750	-0.09726800
13.2300	-0.07233600	13.8350	-0.11797000
13.8450	-0.11792000	13.9000	-0.11976000
14.6800	-0.04556000	15.6500	-0.12568000

Table 3.4: Segment 1 north-east corner column minor direction deformation

Time	Maximum	Time	Minimum
0.0050	0.00064445	0.0400	0.00064042
0.0650	0.00065017	0.2200	0.00041369
0.2400	0.00042357	0.2950	0.00034782
0.3150	0.00036809	0.5100	0.00002075
0.5500	0.00005352	0.5800	0.00002420
0.6150	0.00007722	0.6600	0.00000357
0.6850	0.00004090	0.7300	-0.00008869
0.7550	-0.00005892	0.7950	-0.00013326
0.8250	-0.00006410	0.8550	-0.00009938
0.8800	-0.00008488	0.8900	-0.00008663
0.9200	-0.00006490	0.9500	-0.00013004
0.9750	-0.00009618	1.1500	-0.00065457
1.1850	-0.00058368	1.2000	-0.00059320
1.7100	0.00316910	1.7450	0.00309050
1.7650	0.00312000	1.9450	0.00235930
1.9850	0.00247010	1.9950	0.00246320
2.5150	0.01637100	3.1650	-0.05044000
3.6300	0.06376600	3.6500	0.04038500
3.6800	0.23264000	3.7850	0.04154900
3.7900	0.04155400	3.8100	0.04079400
3.8200	0.04093700	4.3550	-0.08143700
4.9600	0.03129100	5.5700	-0.11261000
6.3350	0.23298000	6.3400	0.22810000
6.3450	0.24877000	6.3550	0.23476000
6.3600	0.23606000	7.0250	0.00754430
7.7900	0.17144000	7.8600	0.16807000
7.8650	0.16809000	7.8700	0.16807000
7.9100	0.21467000	8.1650	0.20412000
8.2000	0.20470000	9.0300	0.07071600
9.5900	0.25131000	9.6000	0.23679000
9.7000	0.25181000	9.7300	0.25075000
9.7900	0.25633000	10.4450	0.13190000
11.0300	0.25112000	11.7700	0.12090000
12.4050	0.29188000	12.4900	0.27013000
12.5400	0.46163000	12.5500	0.44631000
12.5550	0.44714000	12.6100	0.44134000
12.6300	0.44211000	13.2000	0.33576000
13.7000	0.42510000	13.7300	0.41874000
13.7850	0.42901000	13.7900	0.42161000
13.9950	0.48297000	14.0050	0.47176000
14.1350	0.48617000	14.3750	0.47778000
14.3950	0.47859000	14.4600	0.47167000
14.4800	0.47198000	14.5350	0.46967000
14.8700	0.51054000	14.8850	0.50974000
14.8950	0.51024000	14.9200	0.50935000
14.9500	0.51339000	14.9550	0.50980000
14.9600	0.51848000	14.9650	0.50882000
15.1100	0.64320000	15.1150	0.63814000
15.2400	0.66416000	15.2600	0.65161000
15.2750	0.65243000	15.2900	0.63886000
15.4050	0.67213000	15.4100	0.66102000
15.7650	0.76039000	16.0000	-0.07281400

Table 3.5: Segment 1 south-west corner column major direction deformation

Time	Maximum	Time	Minimum
0.0050	0.00256190	0.0400	0.00255740
0.0650	0.00256640	0.2200	0.00235620
0.2350	0.00236120	0.2950	0.00224890
0.3150	0.00225970	0.4400	0.00204190
0.4550	0.00204640	0.5100	0.00197660
0.5450	0.00200250	0.5800	0.00196990
0.6150	0.00201240	0.6600	0.00192970
0.6850	0.00197330	0.7250	0.00186520
0.7550	0.00189850	0.7950	0.00180050
0.8250	0.00185340	0.8550	0.00180770
0.9200	0.00186510	0.9500	0.00182830
0.9750	0.00188190	1.1500	0.00131860
1.1850	0.00140210	1.2000	0.00139600
1.7100	0.00505390	1.7450	0.00497690
1.7650	0.00499480	1.8900	0.00437250
1.9000	0.00437530	1.9400	0.00427670
1.9850	0.00439990	2.0000	0.00438460
2.5150	0.01803000	2.9700	-0.03322500
3.0050	-0.01197400	3.1600	-0.23331000
3.7500	-0.07781700	4.1550	-0.21544000
4.2050	-0.00584250	4.2200	-0.00665010
4.2450	-0.00594600	4.3600	-0.01204600
4.9950	0.09256700	5.5950	-0.13731000
6.3800	0.10030000	6.6100	0.03293700
6.8250	0.95702000	7.0400	0.91099000
7.2600	0.93226000	7.3400	0.92842000
7.9350	1.00650000	9.0250	0.91323000
9.7900	1.08270000	10.4600	0.97773000
11.0500	1.06090000	11.6600	0.99094000
11.6950	0.99126000	11.8350	0.98725000
12.6300	1.21920000	13.1750	1.12140000
14.0850	1.31920000	14.6400	1.24740000
15.1750	1.42130000	15.6250	1.32580000

Table 3.6: Segment 1 south-east corner column major direction deformation

Time	Maximum	Time	Minimum
0.0050	0.00067227	0.0400	0.00066815
0.0650	0.00067893	0.2200	0.00044539
0.2400	0.00045611	0.2950	0.00038109
0.3150	0.00040224	0.5100	0.00006351
0.5500	0.00009716	0.5800	0.00006809
0.6150	0.00012054	0.6600	0.00004692
0.6850	0.00008577	0.7300	-0.00004102
0.7600	-0.00000872	0.7950	-0.00008473
0.8250	-0.00001621	0.8550	-0.00005233
0.9200	-0.00000753	0.9500	-0.00006331
0.9750	-0.00002503	1.1500	-0.00058598
1.1850	-0.00051786	1.2000	-0.00052978
1.7100	0.00315860	1.7450	0.00308290
1.7650	0.00310830	1.9400	0.00235520
1.9850	0.00248620	1.9950	0.00248120
2.5150	0.01630400	3.1650	-0.04847000
3.5150	0.02781500	3.5250	0.01525600
3.5550	0.23594000	3.6150	0.03744800
3.6350	0.03833600	3.6500	0.03749300
3.7600	0.07696600	4.3750	-0.04311100
4.9750	0.05943400	5.5900	-0.07935900
5.9100	0.00010313	5.9800	-0.08200500
6.3050	-0.01137100	6.9900	-0.14437000
7.7300	-0.03576300	8.1700	-0.05510200
8.3100	-0.05087800	9.0250	-0.12233000
9.7000	-0.01376700	9.7200	-0.01409900
9.7550	-0.01256300	10.4450	-0.11034000
11.0300	-0.03057600	11.7350	-0.12501000
12.3600	-0.02143200	12.3650	-0.02254200
12.3700	-0.01799600	12.3800	-0.02573000
12.3900	-0.02437500	12.4250	-0.02981000
12.4350	-0.02960300	12.4550	-0.05038000
12.4700	-0.02602300	12.5300	-0.04258400
12.6150	-0.02977800	12.6600	-0.03570100
12.6800	-0.03499500	13.2100	-0.10013000
13.2400	-0.10008000	13.3700	-0.10229000
13.8500	0.00728910	14.0150	-0.04080000
14.0600	-0.02282600	14.2900	-0.03561200
14.3700	-0.03275900	14.3850	-0.03923600
14.3950	-0.03534500	14.4050	-0.03595000
14.4100	-0.02595200	14.4500	-0.03728900
14.4850	-0.03435300	14.5750	-0.08334100
14.5850	-0.07608300	14.6150	-0.07985800
14.8100	-0.04561300	14.8950	-0.08269300
15.2850	0.06999500	15.2900	0.06228400
15.4150	0.12920000	15.4350	0.11512000
15.4900	0.13381000	15.4950	0.13380000
15.6700	0.16826000	15.6750	0.15078000
15.9550	0.31575000	15.9600	0.30606000

Table 3.7: Segment 1 north-west corner column major direction deformation

Time	Maximum	Time	Minimum
0.0050	0.00253190	0.0400	0.00252750
0.0650	0.00253540	0.2200	0.00232300
0.2350	0.00232730	0.2950	0.00221460
0.3150	0.00222460	0.4400	0.00200260
0.4500	0.00200610	0.5100	0.00193390
0.5450	0.00195910	0.5800	0.00192610
0.6150	0.00196910	0.6600	0.00188650
0.6850	0.00192870	0.7250	0.00181810
0.7550	0.00184890	0.7950	0.00175250
0.8250	0.00180610	0.8550	0.00176130
0.8800	0.00177480	0.8900	0.00177340
0.9200	0.00180810	0.9500	0.00176180
0.9750	0.00181080	1.1500	0.00125300
1.1850	0.00133930	1.1950	0.00133540
1.7100	0.00506070	1.7450	0.00497890
1.7650	0.00500000	1.9450	0.00427350
1.9800	0.00437950	2.0000	0.00436100
2.5150	0.01810600	3.1650	-0.04842700
3.7500	0.08499600	4.2600	-0.03553000
4.3000	-0.00025263	4.3150	-0.00167720
4.3200	-0.00021659	4.3750	-0.02786300
4.9550	0.11011000	5.4400	-0.01407500
5.4450	-0.01275600	5.4500	-0.01609800
5.4700	-0.01476200	5.6850	-0.62701000
6.3250	-0.33418000	6.3600	-0.33558000
6.3700	-0.33360000	7.1400	-0.73827000
7.7750	-0.58395000	8.1900	-0.60342000
8.2900	-0.60160000	9.0100	-0.70015000
9.7750	-0.53438000	10.4450	-0.66188000
11.0400	-0.54553000	11.7450	-0.67135000
12.6200	-0.44358000	12.6600	-0.44949000
12.6750	-0.44935000	13.3450	-0.53338000
14.0700	-0.36841000	14.2900	-0.38124000
14.3900	-0.37557000	14.4600	-0.41473000
14.4800	-0.41372000	14.6250	-0.43450000
14.6850	-0.42901000	14.8400	-0.43730000
15.9950	-0.11561000	16.0000	-0.11567000

Table 3.8: Segment 1 north-east corner column major direction deformation

Time	Maximum	Time	Minimum
0.1100	-1473.50000000	0.0050	-1479.40000000
0.3550	-1441.40000000	0.2100	-1494.80000000
0.6600	-1465.20000000	0.5000	-1491.60000000
0.8650	-1447.40000000	0.7450	-1491.20000000
1.1150	-1489.60000000	1.0050	-1510.90000000
1.3200	-1400.90000000	1.1900	-1500.40000000
1.5650	-1447.60000000	1.4450	-1466.80000000
1.8100	-1518.70000000	1.7500	-1526.50000000
2.0800	-1464.50000000	1.9300	-1544.30000000
2.4300	-1771.80000000	2.3450	-1830.50000000
3.2250	37.18300000	2.5700	-1976.00000000
3.6650	-3360.70000000	3.6600	-3366.90000000
4.3750	467.53000000	3.8100	-3636.20000000
5.6050	1443.00000000	5.0650	-3573.90000000
5.7500	1433.00000000	5.6750	1394.60000000
6.3500	-2063.60000000	6.1550	-3974.40000000
7.0600	1525.50000000	6.3550	-2063.70000000
7.8900	-1923.00000000	7.8100	-2036.60000000
8.9650	1049.00000000	7.9050	-1934.90000000
9.5950	-1845.70000000	9.5900	-1918.80000000
10.4500	668.31000000	9.6000	-1849.20000000
11.8300	661.92000000	11.0750	-1419.30000000
13.2050	119.41000000	12.4000	-1805.30000000
13.3250	108.86000000	13.2950	108.62000000
13.7900	-1066.40000000	13.7000	-1548.40000000
14.3850	-332.81000000	13.7950	-1067.90000000
14.5750	-265.23000000	14.4000	-335.88000000
14.9650	-465.99000000	14.9050	-858.24000000
15.8200	-82.42100000	14.9750	-479.78000000
16.0000	-69.59500000	15.8250	-82.64900000

Table 3.9: Segment 1 south-west corner column axial force

Time	Maximum	Time	Minimum
0.1050	-1475.10000000	0.0050	-1479.40000000
0.3400	-1468.20000000	0.2200	-1507.50000000
0.6550	-1509.00000000	0.5100	-1531.60000000
0.8650	-1499.50000000	0.7450	-1537.40000000
1.0500	-1565.50000000	1.0150	-1566.40000000
1.1000	-1565.30000000	1.0700	-1565.60000000
1.5750	-1331.10000000	1.2000	-1591.70000000
1.6850	-1334.60000000	1.6250	-1344.80000000
1.7850	-1341.10000000	1.7400	-1349.70000000
2.2750	-1051.30000000	1.9500	-1432.50000000
2.4800	-817.59000000	2.3200	-1072.70000000
3.0400	-3359.10000000	3.0100	-3373.90000000
3.6650	1859.60000000	3.0850	-3378.10000000
4.1650	-3398.30000000	4.1550	-3402.70000000
4.9150	1464.20000000	4.3250	-3542.50000000
6.1400	2787.70000000	5.5800	-3888.20000000
7.4050	1309.50000000	6.8200	-4004.40000000
8.4900	192.22000000	7.9550	-2532.70000000
9.6450	-665.87000000	9.2150	-2132.80000000
9.7700	-631.04000000	9.6800	-710.10000000
10.9950	434.23000000	10.4150	-2802.60000000
12.3650	542.86000000	11.7250	-3434.30000000
12.3900	557.46000000	12.3750	531.70000000
12.7350	-879.19000000	12.6350	-999.54000000
13.0850	-1351.30000000	12.9450	-1623.40000000
13.5000	-1270.00000000	13.2750	-1735.50000000
13.7800	-1251.10000000	13.6500	-1466.80000000
14.7100	13.77600000	14.0250	-2373.60000000
16.0000	-2009.10000000	15.6300	-2812.30000000

Table 3.10: Segment 1 south-east corner column axial force

Time	Maximum	Time	Minimum
0.1150	-1472.10000000	0.0050	-1479.80000000
0.3600	-1427.90000000	0.2100	-1490.50000000
0.6600	-1437.10000000	0.4850	-1468.60000000
0.8950	-1409.10000000	0.7400	-1458.80000000
1.1100	-1398.00000000	0.9850	-1436.20000000
1.3000	-1409.10000000	1.2300	-1436.70000000
1.8500	-1579.30000000	1.7200	-1637.50000000
2.0400	-1554.00000000	1.9250	-1586.90000000
2.3750	-1939.70000000	2.2800	-2024.40000000
3.1400	655.09000000	2.5050	-2118.90000000
3.5400	-3361.80000000	3.5300	-3370.90000000
4.2900	1764.10000000	3.7550	-3750.70000000
5.4850	2126.50000000	4.8800	-3671.10000000
6.3400	-3468.60000000	6.0300	-3996.30000000
6.9450	2261.40000000	6.3550	-3498.70000000
8.0100	-260.42000000	7.5250	-2858.00000000
9.1450	547.97000000	8.5450	-2554.50000000
10.4300	378.86000000	9.8150	-3015.80000000
11.7750	1015.80000000	11.0600	-3474.80000000
12.3600	-2178.30000000	12.3350	-3514.40000000
12.3700	-2091.10000000	12.3650	-2264.70000000
13.1450	-319.78000000	12.3750	-2097.10000000
13.3900	-396.18000000	13.2900	-451.47000000
14.3800	-1012.80000000	13.8600	-1799.80000000
14.5750	-537.95000000	14.3900	-1050.70000000
14.5850	-515.86000000	14.5800	-551.22000000
14.8450	-444.32000000	14.6650	-545.34000000
14.9100	-404.84000000	14.8500	-444.46000000
15.0550	-362.07000000	14.9450	-405.99000000
15.4900	-163.89000000	15.0600	-362.24000000
15.9700	-66.17400000	15.4950	-163.91000000
16.0000	-66.04000000	15.9800	-66.44000000

Table 3.11: Segment 1 north-west corner column axial force

Time	Maximum	Time	Minimum
0.1100	-1473.70000000	0.0050	-1479.80000000
0.3500	-1455.60000000	0.2150	-1502.80000000
0.6550	-1480.90000000	0.4950	-1507.60000000
0.8900	-1462.10000000	0.7400	-1504.90000000
1.1000	-1473.20000000	0.9900	-1489.20000000
1.3300	-1469.40000000	1.2250	-1526.60000000
1.3950	-1479.00000000	1.3850	-1479.10000000
1.5600	-1447.50000000	1.4200	-1479.80000000
1.8200	-1413.60000000	1.6350	-1484.40000000
2.0850	-1413.20000000	1.9500	-1474.20000000
2.4250	-1098.60000000	2.1600	-1428.10000000
2.6150	-941.75000000	2.4650	-1104.30000000
3.9000	161.17000000	3.2400	-3071.00000000
4.3100	-3359.70000000	4.2950	-3373.00000000
4.3500	-3401.70000000	4.3400	-3402.80000000
5.0000	320.53000000	4.4150	-3523.10000000
5.1050	318.06000000	5.0550	306.57000000
6.3400	2051.60000000	5.6850	-3979.80000000
6.3750	2076.70000000	6.3550	2036.10000000
7.8450	1472.50000000	7.1350	-4001.60000000
9.7000	1839.00000000	8.9350	-3104.20000000
11.0150	702.11000000	10.4400	-2035.60000000
12.3600	1113.50000000	11.7550	-2230.50000000
12.3950	1031.90000000	12.3800	1003.20000000
12.7350	299.28000000	12.6150	74.27600000
13.8350	1497.80000000	13.2800	-2167.20000000
15.4500	-477.56000000	14.7650	-2726.50000000
15.7800	-913.18000000	15.7050	-939.29000000

Table 3.12: Segment 1 north-east corner column axial force

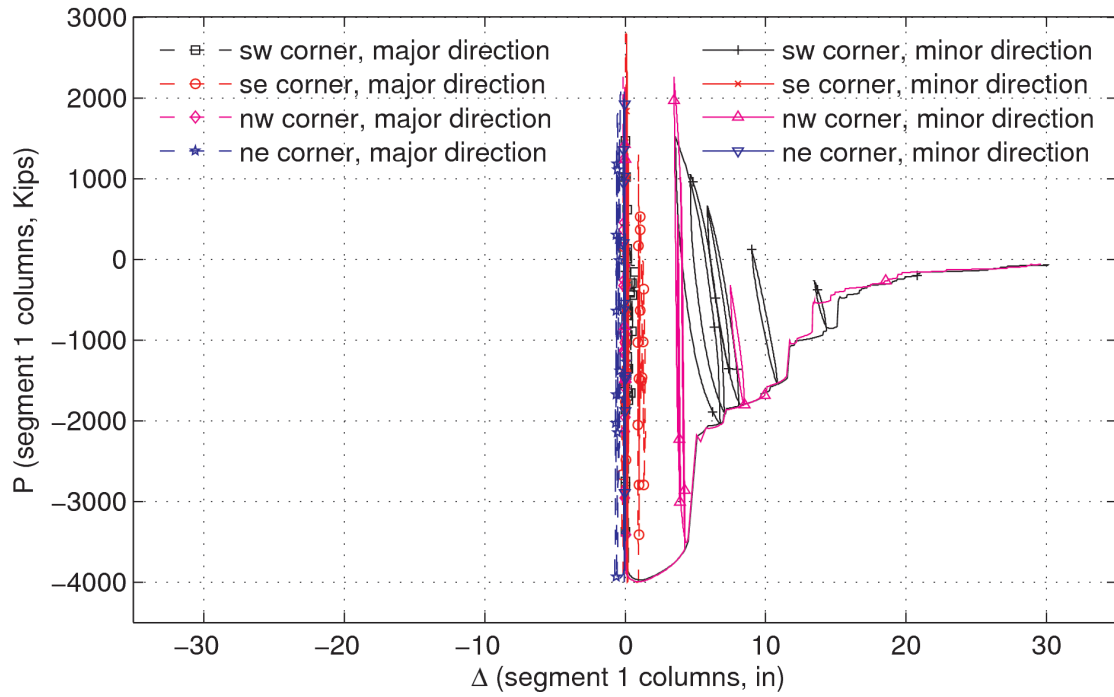
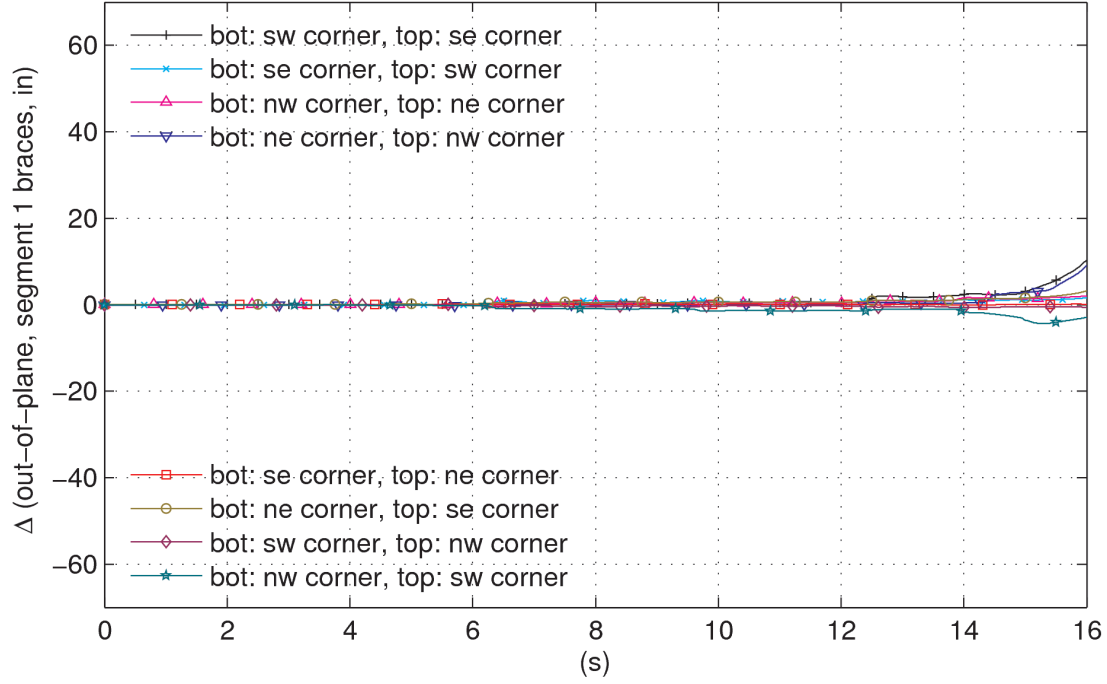
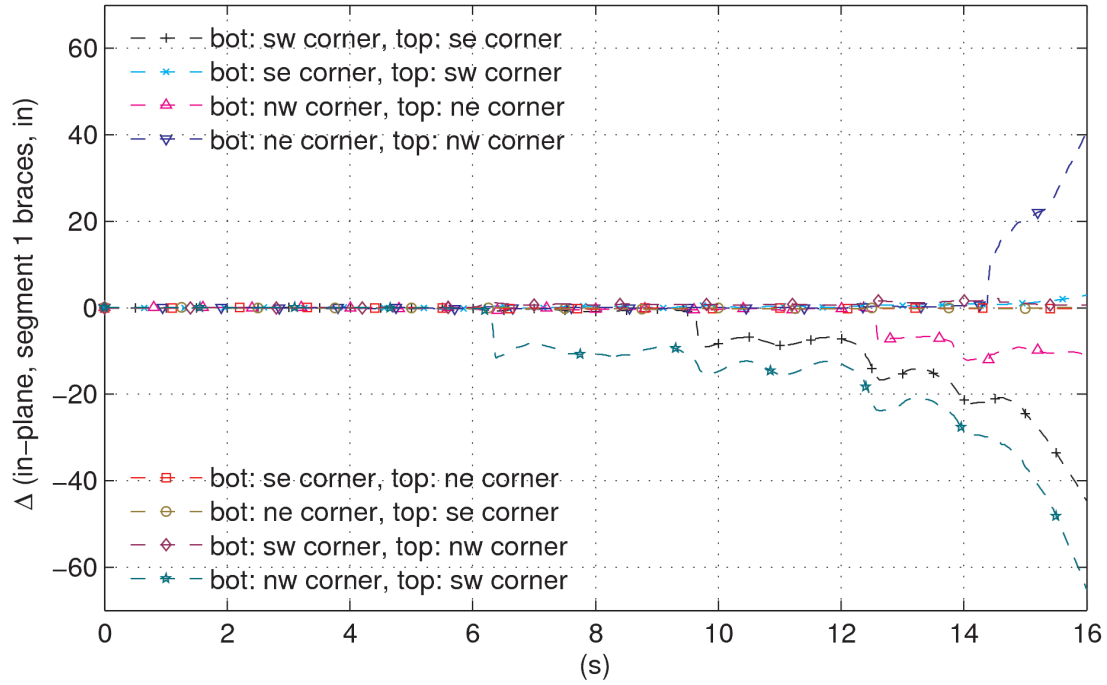


Figure 3.10: Axial force versus lateral deformation response histories of the base (Segment 1) mega-columns of the water-tank under the Takatori ground excitation scaled down by a factor of 0.32.



(a)



(b)

Figure 3.11: Time histories of in-plane and out-of-plane deformations in all the braces of Segment 1 of the water-tank under the Takatori ground excitation scaled down by a factor of 0.32.

Time	Maximum	Time	Minimum
0.0050	0.03884900	0.1100	0.03870900
0.2200	0.03943600	0.3500	0.03829200
0.5050	0.03974300	0.6600	0.03912000
0.7450	0.03986700	0.8600	0.03880800
1.0050	0.04050500	1.1150	0.04006100
1.2000	0.04060600	1.3350	0.03772300
1.4200	0.03819200	1.5700	0.03609100
1.7350	0.03779100	1.8200	0.03703500
1.9800	0.03875100	2.1950	0.03439800
2.3150	0.03759900	2.4500	0.03031400
2.9600	0.05692900	3.0150	0.05272100
3.1150	0.05588000	3.6250	0.00962050
4.1350	0.08954100	4.1500	0.08912400
4.1600	0.08970800	4.4000	0.05895200
4.4150	0.05900700	4.8300	0.02239400
5.3300	0.07728600	5.3550	0.07193600
5.3850	0.07657500	5.4550	0.07382400
5.5050	0.07615100	5.5400	0.07565600
5.6300	0.07965300	5.8950	0.03358300
6.3850	0.40495000	6.4100	0.38980000
6.4500	0.41681000	6.4850	0.40830000
6.5100	0.41082000	7.0950	0.13225000
7.1800	0.13453000	7.2150	0.13436000
7.9350	0.37065000	7.9550	0.37050000
7.9650	0.37055000	8.7850	0.17697000
8.9550	0.18359000	8.9850	0.18347000
9.6600	0.65352000	9.7100	0.58442000
9.7150	0.58490000	9.7250	0.58475000
9.7350	0.58674000	9.7850	0.57247000
9.8000	0.57327000	10.4650	0.39650000
11.0550	0.51909000	11.8750	0.40270000
12.3400	0.55299000	12.3500	0.55053000
12.6400	2.04420000	12.6750	2.03540000
12.6900	2.03590000	13.1700	1.69200000
14.1200	2.50980000	14.5650	2.27120000
14.6250	2.28780000	14.6300	2.28760000

Table 3.13: Segment 1 brace (bot: south-west; top: south-east) out-of-plane deformation

Time	Maximum	Time	Minimum
0.1150	-0.03171600	0.0050	-0.03186300
0.3500	-0.03118700	0.2150	-0.03238700
0.6600	-0.03193400	0.5050	-0.03256900
0.8600	-0.03158500	0.7450	-0.03266300
1.1150	-0.03271500	1.0000	-0.03326500
1.3300	-0.03051700	1.2000	-0.03319300
1.5700	-0.02966400	1.4250	-0.03132600
1.8250	-0.03083400	1.7350	-0.03162300
1.9700	-0.03223000	1.9500	-0.03224800
2.1350	-0.02923200	1.9800	-0.03223100
2.4450	-0.02796700	2.3200	-0.03402200
2.7900	-0.03657900	2.6100	-0.03733400
3.3550	-0.02072000	2.9300	-0.04101700
3.5850	-0.02020300	3.4950	-0.02330500
3.6600	-0.02672700	3.6450	-0.02930300
3.7800	-0.04786600	3.7700	-0.04803300
4.6050	-0.03611900	4.1150	-0.06650300
4.7700	-0.03748000	4.7350	-0.03779000
5.3400	-0.07356800	5.2900	-0.07462600
5.8400	-0.02721300	5.3650	-0.07486700
6.4250	0.83030000	6.1050	-0.07400200
6.5550	0.86950000	6.4400	0.82955000
7.1250	0.34964000	7.1150	0.34963000
7.9100	0.97263000	7.1650	0.34936000
8.1550	0.93402000	8.0750	0.92565000
9.0900	0.51540000	8.9500	0.50832000
9.6450	0.98995000	9.1100	0.51524000
9.7350	0.89034000	9.7000	0.87956000
9.8850	0.87566000	9.7850	0.86878000
10.4750	0.57622000	10.4500	0.57611000
11.1000	0.75794000	10.5950	0.57203000
11.9250	0.58357000	11.8650	0.58279000
12.3900	0.84979000	11.9550	0.58325000
12.5750	0.97783000	12.4000	0.84635000
12.6500	0.94709000	12.6300	0.94243000
13.7500	0.97665000	13.2950	0.70559000
13.9800	1.12220000	13.7650	0.97650000
14.0100	1.12430000	13.9950	1.12120000
14.4650	1.01990000	14.3950	0.93771000
14.5500	1.04690000	14.4850	1.01760000
14.6300	1.06890000	14.5650	1.04570000
14.8900	1.23520000	14.6750	1.05700000
15.0700	1.02650000	15.0000	0.99084000
15.1100	1.04020000	15.0800	1.01830000
15.2750	1.11050000	15.1200	1.02990000
15.3050	1.11410000	15.2800	1.11030000
15.4050	1.11300000	15.3450	1.10110000
15.7350	1.31210000	15.4150	1.10170000
15.8150	1.38040000	15.7400	1.31190000
16.0000	1.64270000	15.8250	1.37760000

Table 3.14: Segment 1 brace (bot: south-east; top: south-west) out-of-plane deformation

Time	Maximum	Time	Minimum
0.0050	0.04118100	0.0400	0.04117400
0.0550	0.04117500	0.1100	0.04101500
0.2150	0.04170200	0.3500	0.04040500
0.5050	0.04183400	0.6600	0.04115300
0.7450	0.04190500	0.8600	0.04075900
1.0000	0.04246200	1.1150	0.04183400
1.2050	0.04240100	1.3250	0.03976100
1.4250	0.04067300	1.5700	0.03915200
1.7350	0.04128900	1.8250	0.04033800
1.9800	0.04188600	2.1250	0.03910500
2.3150	0.04461500	2.4400	0.03885200
2.5900	0.04768300	2.8250	0.04450100
2.9050	0.04586500	3.0950	0.03950900
3.1100	0.03951600	3.3350	0.03002000
3.5200	0.03684300	3.5350	0.03675800
3.8350	0.09855800	3.9650	0.09438200
4.0400	0.09562200	4.2750	0.07862900
4.3100	0.08820300	4.3300	0.08619400
4.3450	0.08708200	4.3700	0.08251900
4.4300	0.08622500	4.5550	0.08227700
5.0950	0.12685000	5.3500	0.10819000
5.3600	0.10833000	5.4400	0.10026000
5.4450	0.10043000	5.4700	0.09831400
5.4850	0.09953600	5.4900	0.09951800
5.6700	0.10656000	5.8200	0.09131900
6.3200	0.40786000	6.3650	0.38155000
6.3800	0.38634000	6.4100	0.37294000
6.4400	0.38086000	7.0200	0.23340000
7.9250	0.45462000	8.8550	0.29955000
8.9300	0.30108000	9.0150	0.29872000
9.7050	0.53075000	9.7300	0.52671000
9.7850	0.53837000	10.4500	0.35913000
11.0650	0.49266000	11.8550	0.35711000
12.5650	1.07990000	12.6150	0.90879000
12.6250	0.90961000	13.1550	0.72341000
13.2900	0.73957000	13.3900	0.73155000
14.0650	1.65480000	14.2900	1.59310000
14.3600	1.60360000	14.3650	1.60220000
14.3900	1.62110000	14.4600	1.45670000
14.4800	1.46040000	14.6300	1.33850000
14.6800	1.35350000	14.8850	1.29830000
14.9600	1.33230000	14.9700	1.33140000

Table 3.15: Segment 1 brace (bot: north-west; top: north-east) out-of-plane deformation

Time	Maximum	Time	Minimum
0.1100	-0.03407800	0.0050	-0.03421800
0.3450	-0.03364500	0.2150	-0.03485400
0.6600	-0.03453200	0.5050	-0.03519200
0.8600	-0.03419800	0.7450	-0.03531300
1.1150	-0.03550300	1.0050	-0.03594500
1.3350	-0.03305900	1.2000	-0.03607000
1.5700	-0.03134700	1.4200	-0.03356600
1.8250	-0.03225900	1.7350	-0.03302100
2.2000	-0.02930300	1.9500	-0.03395500
2.4500	-0.02450300	2.3150	-0.03232100
3.0250	-0.05818300	3.0150	-0.05818800
3.5200	-0.01577400	3.1350	-0.06074700
3.5800	-0.01087600	3.5350	-0.01687400
4.3050	-0.10535000	4.1900	-0.11040000
4.8500	-0.05191600	4.4100	-0.10674000
5.9000	-0.08031700	5.6300	-0.15165000
6.3000	0.13977000	5.9500	-0.09044000
7.3700	0.11217000	6.8150	-0.07902700
8.7400	0.06616800	7.9250	-0.08244100
9.5900	-0.02875600	9.3550	-0.03659200
9.7100	0.03843500	9.6100	-0.02956300
10.0700	0.06541100	9.7300	0.03752900
10.9650	0.12213000	10.4350	0.03793700
12.3200	0.11184000	11.7350	0.02342400
12.5600	0.54805000	12.3400	0.10674000
12.6500	0.47543000	12.6150	0.45553000
12.7150	0.47090000	12.6850	0.46691000
13.6700	0.38718000	13.1950	0.31098000
13.7850	0.37401000	13.7700	0.37333000
13.8350	0.36688000	13.8300	0.36674000
14.5650	2.56480000	13.9100	0.35088000
14.8400	2.86200000	14.5850	2.34840000
14.9300	2.85610000	14.8800	2.82200000
15.0150	2.88360000	14.9700	2.84950000
15.0500	2.88760000	15.0350	2.88080000
15.2850	3.19210000	15.0600	2.87980000
16.0000	9.00940000	15.2950	3.18140000

Table 3.16: Segment 1 brace (bot: north-east; top: north-west) out-of-plane deformation

Time	Maximum	Time	Minimum
0.0300	0.03983200	0.0050	0.03983000
0.2150	0.04051900	0.1100	0.03970300
0.5050	0.04082500	0.3400	0.03932000
0.7400	0.04087500	0.6600	0.04015100
1.0050	0.04094200	0.8700	0.03977500
1.2150	0.04155300	1.1100	0.04070700
1.3750	0.03942200	1.3350	0.03913700
1.4250	0.03944900	1.4000	0.03939200
1.6300	0.03838500	1.5650	0.03783200
1.7350	0.03828000	1.7000	0.03808200
1.9400	0.03917400	1.7950	0.03772300
2.4800	0.02702900	2.4650	0.02701200
3.1550	0.08547500	2.5100	0.02691900
3.6900	-0.00146910	3.6300	-0.00435030
4.2750	0.10978000	3.7000	-0.00149990
4.3650	0.12259000	4.2950	0.10733000
5.6750	0.18671000	4.9600	-0.01036700
6.3100	0.02221200	6.2100	0.01199500
6.8700	0.20788000	6.3750	-0.00004402
7.1350	0.17001000	7.0900	0.16682000
7.9550	0.09579800	7.7200	0.06505500
8.1850	0.10769000	8.0200	0.09465800
9.0000	0.16690000	8.3650	0.09147100
9.6900	0.07504900	9.6450	0.06173200
10.4500	0.16841000	9.7500	0.06837300
11.7150	0.18961000	11.0350	0.07329800
12.3750	0.06025000	12.3700	0.05993500
12.4300	0.05707200	12.4000	0.05201000
12.5550	0.06298100	12.4600	0.05263400
12.6550	-0.02380000	12.6200	-0.03198300
12.9550	0.01630000	12.6800	-0.02530500
13.3650	0.03238300	13.0300	0.01500100
13.7950	-0.04027700	13.7850	-0.04212800
14.2950	-0.08896200	14.0600	-0.10791000
14.4600	-0.00956320	14.3850	-0.09450100
14.5650	0.00924510	14.4800	-0.01103700
14.6350	0.01405000	14.5800	0.00440670
14.9150	0.06569300	14.6650	0.01202300
15.0000	0.05285600	14.9800	0.05201500
15.0750	0.04623900	15.0700	0.04622700
15.1150	0.04547200	15.1000	0.04524700
15.8150	0.14154000	15.3500	0.02088400
15.8650	0.14189000	15.8350	0.14131000

Table 3.17: Segment 1 brace (bot: south-east; top: north-east) out-of-plane deformation

Time	Maximum	Time	Minimum
0.0050	0.04103400	0.1150	0.04082200
0.2100	0.04135800	0.3600	0.03984000
0.4850	0.04100300	0.5800	0.04068800
0.5900	0.04069100	0.6600	0.04023000
0.7450	0.04084400	0.8750	0.03964900
0.9850	0.04066100	1.1100	0.03983400
1.2250	0.04080300	1.3100	0.03936800
1.6450	0.04352500	1.6750	0.04343800
1.7250	0.04365900	1.8150	0.04272100
1.9300	0.04342900	2.0550	0.04248800
2.2750	0.05079700	2.3650	0.05015500
2.5000	0.05446900	2.9750	0.00848010
3.0050	0.01137500	3.0500	0.00584280
3.0600	0.00594010	3.1700	-0.00062165
3.7900	0.13582000	4.1400	0.05994900
4.1550	0.06126000	4.1800	0.05881000
4.2100	0.06131300	4.2250	0.06074800
4.2350	0.06080900	4.2850	0.05987500
4.2900	0.05988500	4.3250	0.05975900
4.8400	0.16407000	4.9500	0.15868000
5.0300	0.16251000	5.4550	0.05479800
6.3800	0.49254000	6.4300	0.47428000
6.4450	0.47517000	6.6400	0.39940000
6.8350	0.50162000	6.9750	0.46700000
7.2100	0.56500000	7.3100	0.55522000
7.4850	0.59263000	7.8950	0.53914000
7.9050	0.53951000	7.9250	0.53911000
8.0150	0.54204000	8.0750	0.54136000
8.3150	0.58584000	8.4250	0.57795000
8.5900	0.60545000	8.8050	0.55311000
8.8700	0.55419000	9.1400	0.51004000
9.2250	0.51382000	9.2500	0.51373000
9.8150	0.68717000	10.4900	0.58599000
11.0550	0.71125000	11.6650	0.59218000
11.7200	0.59298000	11.8550	0.58786000
12.6150	1.07880000	12.7900	1.01720000
12.9050	1.03290000	13.1150	0.93935000
13.2750	0.97206000	13.4400	0.94401000
13.7250	1.02560000	13.7600	1.02310000
14.0750	1.29760000	14.1900	1.28180000
14.3850	1.42510000	14.4400	1.36610000
14.6200	1.44970000	14.6400	1.44630000

Table 3.18: Segment 1 brace (bot: north-east; top: south-east) out-of-plane deformation

Time	Maximum	Time	Minimum
0.1150	-0.03265800	0.0050	-0.03286700
0.3600	-0.03170300	0.2150	-0.03317200
0.5800	-0.03252000	0.4850	-0.03282300
0.6600	-0.03207700	0.5900	-0.03252400
0.8650	-0.03152900	0.7450	-0.03268400
1.1100	-0.03170200	0.9900	-0.03257500
1.3100	-0.03119600	1.2250	-0.03259700
1.6650	-0.03529600	1.6500	-0.03531000
1.8250	-0.03450300	1.7250	-0.03558100
2.0600	-0.03432400	1.9400	-0.03520200
2.3800	-0.04252800	2.3050	-0.04349600
3.1700	0.00868000	2.5250	-0.04712300
3.6150	-0.07464900	3.5800	-0.08702700
3.6500	-0.07448700	3.6350	-0.07494700
4.3400	0.00932650	3.7900	-0.11596000
5.4950	0.01925800	5.0250	-0.10584000
6.3950	-0.54427000	6.3200	-0.63366000
7.0000	-0.20331000	6.4200	-0.55176000
8.1000	-0.42423000	7.8750	-0.47164000
9.0050	-0.26820000	8.1800	-0.42781000
9.7150	-0.40748000	9.6300	-0.48941000
10.4300	-0.23393000	9.7250	-0.40766000
11.7650	-0.22427000	11.0900	-0.37506000
12.4100	-0.48348000	12.3850	-0.49095000
12.4950	-0.52348000	12.4700	-0.52811000
12.5650	-0.52883000	12.5350	-0.53286000
13.1350	-0.40899000	12.6150	-0.57491000
13.4300	-0.38828000	13.2450	-0.41668000
14.0200	-0.67706000	13.9800	-0.68202000
14.2700	-0.57523000	14.0300	-0.67838000
14.4500	-0.59028000	14.4000	-0.66233000
14.5600	-0.59400000	14.4950	-0.61911000
14.5750	-0.59097000	14.5650	-0.59423000
14.6250	-0.52717000	14.5800	-0.59121000
14.8400	-0.46985000	14.6600	-0.54010000
14.9050	-0.46398000	14.8550	-0.47464000
15.0050	-0.44514000	14.9600	-0.47014000
15.0700	-0.46583000	15.0500	-0.47204000
15.3950	-0.53098000	15.3400	-0.53621000
15.6700	-0.44036000	15.4050	-0.53140000
15.6900	-0.44774000	15.6850	-0.44796000
15.9750	-0.56507000	15.9650	-0.56961000

Table 3.19: Segment 1 brace (bot: south-west; top: north-west) out-of-plane deformation

Time	Maximum	Time	Minimum
0.0050	-0.03404900	0.0350	-0.03405200
0.1100	-0.03391800	0.2150	-0.03472900
0.3400	-0.03347800	0.5000	-0.03498100
0.6600	-0.03428500	0.7400	-0.03500300
0.8800	-0.03386200	1.0050	-0.03497700
1.1100	-0.03475900	1.2150	-0.03563800
1.3350	-0.03328600	1.3800	-0.03362800
1.3950	-0.03360200	1.4300	-0.03371400
1.4900	-0.03312400	1.4950	-0.03312700
1.5650	-0.03238000	1.6250	-0.03290400
1.7000	-0.03250600	1.7350	-0.03269800
1.7900	-0.03220400	1.9400	-0.03361700
2.1350	-0.03092500	2.1450	-0.03092800
2.5200	-0.02185900	3.1200	-0.07257200
3.6300	0.00743380	3.6550	0.00159030
3.6700	0.00328680	3.6800	0.00223140
3.7000	0.00545620	3.8100	-0.04783800
3.8300	-0.04693800	4.4300	-0.15463000
4.9600	-0.06805200	5.6750	-0.22764000
6.0400	-0.14796000	6.0800	-0.15234000
6.1150	-0.15119000	6.3200	-0.55196000
6.3250	-0.54291000	6.3450	-0.66353000
6.3550	-0.64393000	6.3950	-0.92415000
6.4350	-0.90848000	6.4550	-0.90913000
6.6500	-0.85354000	6.8200	-0.89507000
6.9950	-0.83940000	7.2050	-0.90808000
7.3050	-0.89853000	7.5500	-0.96162000
7.6450	-0.95494000	7.7700	-0.96041000
7.9300	-0.94262000	8.3050	-0.99964000
8.4300	-0.98793000	8.5750	-1.00740000
9.1550	-0.89035000	9.7600	-1.44200000
9.8050	-1.43750000	9.8200	-1.43770000
10.4850	-1.29130000	11.0600	-1.45730000
11.8450	-1.29360000	12.3200	-1.46400000
12.3650	-1.44760000	12.3750	-1.44820000
12.7750	-1.08270000	12.9200	-1.09500000
13.1050	-1.06300000	13.2650	-1.07550000
13.4600	-1.05930000	13.6950	-1.09040000
13.7800	-1.04560000	13.7950	-1.05100000
13.8450	-1.00370000	15.3600	-4.34210000

Table 3.20: Segment 1 brace (bot: north-west; top: south-west) out-of-plane deformation

Time	Maximum	Time	Minimum
0.0400	-0.00165290	0.0050	-0.00166280
0.1600	-0.00142510	0.0650	-0.00167200
0.2200	-0.00127090	0.1700	-0.00143020
0.3000	-0.00096125	0.2300	-0.00127570
0.4350	-0.00057173	0.3150	-0.00097382
0.5100	-0.00047874	0.4600	-0.00060861
0.5800	-0.00044403	0.5450	-0.00052086
0.6600	-0.00032453	0.6150	-0.00052203
0.7250	-0.00024332	0.6900	-0.00043143
0.8000	-0.00006239	0.7550	-0.00032013
0.8550	-0.00003780	0.8250	-0.00014976
0.9450	-0.00016214	0.9250	-0.00019663
1.1500	0.00089132	0.9750	-0.00031971
1.2000	0.00070893	1.1850	0.00069707
1.7500	-0.00680940	1.7150	-0.00695740
1.8850	-0.00547890	1.7600	-0.00682510
1.9400	-0.00534860	1.9050	-0.00550390
2.0000	-0.00557720	1.9850	-0.00561650
2.9800	0.07214300	2.5200	-0.03555800
3.0500	0.08950800	3.0000	0.06992200
3.1600	0.10162000	3.0550	0.08949100
4.1400	0.00842680	3.7600	-0.20921000
4.1850	0.01900400	4.1550	0.00692830
4.2200	0.01834000	4.2050	0.01626800
4.3600	0.02969400	4.2450	0.01673000
5.5950	0.10609000	5.0100	-0.24021000
6.4200	-0.71478000	6.3800	-0.79938000
6.6850	-0.35676000	6.4400	-0.72321000
7.0100	-0.24094000	6.7850	-0.38790000
7.8850	-0.82497000	7.7750	-0.84095000
7.9450	-0.83151000	7.9350	-0.83178000
9.0400	-0.36421000	7.9950	-0.83753000
9.7250	-8.38580000	9.7150	-8.39310000
10.4650	-6.84060000	9.7950	-9.06350000
11.8300	-6.84130000	11.0300	-8.66170000
12.6700	-16.63200000	12.6350	-16.70000000
13.1750	-14.20700000	12.6900	-16.64000000
14.3050	-21.85500000	14.1300	-22.11200000
14.5700	-20.73200000	14.3300	-21.85600000

Table 3.21: Segment 1 brace (bot: south-west; top: south-east) in-plane deformation

Time	Maximum	Time	Minimum
0.0050	-0.00165690	0.0400	-0.00166500
0.0650	-0.00164460	0.2200	-0.00219890
0.2450	-0.00216740	0.2900	-0.00226330
0.3200	-0.00220730	0.5100	-0.00306280
0.5500	-0.00298030	0.5800	-0.00303640
0.6200	-0.00290920	0.6600	-0.00304450
0.6850	-0.00297770	0.7300	-0.00330230
0.7600	-0.00324110	0.7950	-0.00335470
0.8250	-0.00317840	0.8550	-0.00323800
0.8750	-0.00321220	0.8950	-0.00322580
0.9150	-0.00319650	0.9550	-0.00340410
0.9750	-0.00336460	1.1550	-0.00455240
1.1800	-0.00442610	1.2000	-0.00444930
1.7100	0.00378450	1.7450	0.00360740
1.7700	0.00369760	1.9450	0.00198900
1.9850	0.00220620	1.9950	0.00219330
2.5100	0.03120300	3.1650	-0.12289000
3.6400	0.12295000	3.6500	0.12179000
3.7000	0.15956000	3.8100	0.06831800
3.8250	0.06912300	4.3550	-0.22912000
4.9650	0.04701100	5.5750	-0.35310000
6.3850	0.41205000	6.9850	-0.19567000
7.9100	0.33793000	9.0500	-0.02602100
9.6550	0.44971000	9.6600	0.44949000
9.7500	0.46091000	10.4450	0.08878100
11.0600	0.40977000	11.7800	0.06953200
12.5750	0.65750000	13.2300	0.40364000
13.9950	0.88356000	14.0050	0.88101000
14.0100	0.88119000	14.3800	0.77351000
14.4650	0.79848000	14.4900	0.79736000
14.5450	0.80213000	14.5700	0.80134000
14.6000	0.80816000	14.6150	0.80763000
14.9500	0.96973000	14.9600	0.96639000
15.3300	1.47640000	15.3400	1.47340000

Table 3.22: Segment 1 brace (bot: south-east; top: south-west) in-plane deformation

Time	Maximum	Time	Minimum
0.0400	0.00666440	0.0050	0.00665580
0.2200	0.00717590	0.0650	0.00664630
0.2950	0.00727300	0.2400	0.00715290
0.5100	0.00802430	0.3150	0.00723140
0.5800	0.00800710	0.5500	0.00794970
0.6600	0.00803040	0.6200	0.00789430
0.7300	0.00826760	0.6850	0.00796160
0.7950	0.00833470	0.7600	0.00820820
0.8550	0.00824260	0.8250	0.00817480
0.8900	0.00823210	0.8750	0.00821780
0.9550	0.00837580	0.9150	0.00819190
1.1050	0.00924210	0.9750	0.00832780
1.1550	0.00948690	1.1100	0.00924160
1.2000	0.00937590	1.1850	0.00935790
1.7450	0.00138860	1.7100	0.00119990
1.9450	0.00299300	1.7700	0.00130250
2.0000	0.00280060	1.9800	0.00277530
3.1650	0.10736000	2.5100	-0.02774200
4.2700	0.08975100	3.7400	-0.19484000
4.3500	0.09706600	4.2950	0.08425100
5.4500	0.05356900	4.9600	-0.25846000
5.6750	0.14022000	5.4700	0.04875300
6.3650	-0.62678000	6.3000	-0.66424000
6.9750	-0.01711800	6.3700	-0.62712000
8.1450	-0.33551000	7.7000	-0.43296000
9.0350	-0.11831000	8.3350	-0.37873000
10.4450	-0.16983000	9.7850	-0.56492000
11.7350	-0.14132000	11.0450	-0.55152000
12.4200	-0.73312000	12.4100	-0.73701000
12.6650	-7.63660000	12.6200	-7.85570000
12.8750	-7.07080000	12.6700	-7.63770000
13.1400	-6.66130000	12.9150	-7.07690000
13.4150	-6.60560000	13.2650	-6.77140000
14.2450	-11.81900000	14.0650	-12.11700000
14.4550	-10.71600000	14.3850	-12.33200000
14.6300	-9.92370000	14.4850	-10.77700000
14.9000	-9.15420000	14.6700	-10.01900000
15.7300	-10.22100000	15.3950	-10.54900000

Table 3.23: Segment 1 brace (bot: north-west; top: north-east) in-plane deformation

Time	Maximum	Time	Minimum
0.0050	0.00665570	0.0400	0.00664640
0.0650	0.00666740	0.2200	0.00625030
0.2350	0.00625850	0.2950	0.00597880
0.3150	0.00599930	0.4350	0.00557090
0.4550	0.00559790	0.5100	0.00545760
0.5450	0.00550450	0.5800	0.00543140
0.6150	0.00552020	0.6600	0.00532850
0.6900	0.00542820	0.7250	0.00523190
0.7550	0.00530670	0.8000	0.00506950
0.8250	0.00516660	0.8550	0.00506460
0.9250	0.00520690	0.9450	0.00516410
0.9750	0.00530490	1.1500	0.00409600
1.1850	0.00427700	1.2000	0.00425880
1.7150	0.01188200	1.7450	0.01174500
1.7600	0.01176200	1.8900	0.01041400
1.9050	0.01042400	1.9400	0.01026900
1.9850	0.01052700	2.0000	0.01050300
2.5200	0.03886400	3.1700	-0.10604000
3.5800	0.10998000	3.6500	0.07249900
3.7700	0.11600000	4.3800	-0.17725000
4.9800	0.07995500	5.5950	-0.30623000
6.3100	0.16651000	6.3450	0.16300000
6.3600	0.16529000	7.0000	-0.30879000
7.7350	0.07967800	8.1750	0.03271800
8.3000	0.04036700	9.0150	-0.19717000
9.7700	0.14062000	10.4500	-0.12978000
11.0500	0.11811000	11.7350	-0.16639000
12.5700	0.37411000	13.3600	0.18170000
14.1200	0.55301000	14.1450	0.55294000
14.9300	19.85000000	14.9550	19.84200000

Table 3.24: Segment 1 brace (bot: north-east; top: north-west) in-plane deformation

Time	Maximum	Time	Minimum
0.0050	-0.00092236	0.0200	-0.00092249
0.0400	-0.00091708	0.0800	-0.00098617
0.1100	-0.00094854	0.2400	-0.00119770
0.2700	-0.00116940	0.5700	-0.00187080
0.6450	-0.00181810	0.7700	-0.00219390
0.8150	-0.00204170	0.8350	-0.00205890
0.8550	-0.00201560	1.0300	-0.00364970
1.0600	-0.00362850	1.0850	-0.00365400
1.1300	-0.00347810	1.1400	-0.00348120
1.3800	-0.00007969	1.4000	-0.00011542
1.5850	0.00352520	1.7450	0.00175140
1.7650	0.00176670	1.7850	0.00174350
1.8400	0.00201880	1.9900	0.00010877
2.2050	0.00903880	2.3300	0.00227570
2.4600	0.01337800	2.6450	-0.01100100
2.7000	-0.01080600	2.9400	-0.03986000
3.0700	-0.02981600	3.1500	-0.03360800
3.6150	0.04997600	4.1350	-0.06906700
4.1550	-0.06892800	4.1850	-0.06964300
4.2800	-0.05710800	4.3100	-0.07969900
4.3350	-0.06946300	4.3400	-0.06986600
4.8050	0.05189200	5.2950	-0.06809400
5.4350	-0.06242200	5.4450	-0.06463500
5.4700	-0.05520400	5.5100	-0.06612700
5.9650	0.06354400	6.7000	-0.22252000
7.0750	-0.04877600	7.0900	-0.05015300
7.2750	-0.02097300	7.9350	-0.30055000
8.6400	-0.05311600	9.6000	-0.22771000
9.6500	-0.22427000	9.6850	-0.23113000
9.8200	-0.20970000	9.9100	-0.21076000
10.1550	-0.18814000	10.2000	-0.18843000
10.4150	-0.17143000	10.4750	-0.17226000
10.9850	-0.13059000	11.6550	-0.20911000
12.4000	-0.12343000	12.4300	-0.13632000
12.4650	-0.12936000	12.5600	-0.14027000
12.6050	-0.12470000	12.6550	-0.13583000
12.6650	-0.13580000	12.7800	-0.14796000
13.2300	-0.08374500	13.8250	-0.19960000
13.8550	-0.19713000	13.8950	-0.20072000
14.4100	-0.06065000	14.4250	-0.06120200
14.6800	-0.00566030	15.6700	-0.22915000

Table 3.25: Segment 1 brace (bot: south-east; top: north-east) in-plane deformation

Time	Maximum	Time	Minimum
0.0200	0.00578090	0.0050	0.00578080
0.0800	0.00584640	0.0400	0.00577510
0.2450	0.00599880	0.1100	0.00580070
0.5700	0.00657970	0.2700	0.00597680
0.7700	0.00687980	0.6500	0.00654260
0.8350	0.00677900	0.8100	0.00674180
1.0300	0.00826730	0.8550	0.00673370
1.0850	0.00823690	1.0650	0.00822520
1.4050	0.00501520	1.3800	0.00494540
1.7450	0.00361660	1.5850	0.00171020
1.7800	0.00362020	1.7600	0.00360870
1.9950	0.00515520	1.8450	0.00327320
2.3300	0.00462390	2.2000	-0.00277350
2.6300	0.01704100	2.4550	-0.00556120
2.9300	0.03523700	2.7200	0.01583700
3.1450	0.01623900	3.0500	0.01453700
4.1000	0.05752900	3.5950	-0.04336900
4.1600	0.05650500	4.1450	0.05511100
4.2400	0.01918100	4.2200	0.01818600
5.2500	0.03249000	4.7850	-0.07320100
5.3800	0.00882940	5.3550	0.00157570
6.5650	0.07332400	5.9050	-0.18488000
7.9300	-0.06045700	7.1800	-0.40539000
8.7400	-0.29959000	8.6550	-0.30188000
9.6900	-0.06878700	8.8800	-0.30833000
11.0950	-0.14869000	10.4250	-0.19269000
11.3850	-0.14735000	11.2400	-0.15052000
12.3600	-0.13395000	11.9050	-0.18903000
12.4300	-0.12953000	12.3950	-0.14496000
12.5750	-0.12113000	12.4650	-0.13491000
12.7200	-0.10274000	12.6000	-0.12407000
12.7600	-0.10291000	12.7400	-0.10318000
13.9000	-0.03681600	13.2450	-0.22462000
16.0000	0.12456000	14.6200	-0.26793000

Table 3.26: Segment 1 brace (bot: north-east; top: south-east) in-plane deformation

Time	Maximum	Time	Minimum
0.0400	-0.00091298	0.0050	-0.00091933
0.1100	-0.00093452	0.0800	-0.00098135
0.2750	-0.00110890	0.2400	-0.00114760
0.6500	-0.00167850	0.5650	-0.00173530
0.8100	-0.00187260	0.7650	-0.00203460
0.8550	-0.00184590	0.8300	-0.00189720
1.0650	-0.00338790	1.0300	-0.00344100
1.3750	-0.00004767	1.0800	-0.00339240
1.5850	0.00317320	1.4050	-0.00013807
1.7650	0.00124930	1.7450	0.00123620
1.8400	0.00159730	1.7750	0.00124210
2.2000	0.00759930	1.9900	-0.00031617
2.4550	0.01046100	2.3300	0.00013084
2.7250	-0.01106600	2.6300	-0.01287500
3.0850	-0.01623100	2.9300	-0.03066800
3.5150	0.03317200	3.1450	-0.01825000
3.5900	0.03998500	3.5350	0.02900900
3.6450	0.03228700	3.6400	0.03224800
4.7850	0.03064000	4.0950	-0.08519200
5.9050	0.08591300	5.2450	-0.08388700
6.3100	1.41460000	5.9450	0.06993900
7.5200	0.87813000	6.8950	0.57225000
8.5500	0.85278000	8.0000	0.64816000
9.6450	0.76902000	9.2600	0.69328000
9.8350	0.74261000	9.7500	0.73945000
10.9950	0.84499000	10.4150	0.64243000
12.3200	0.83332000	11.7500	0.62701000
12.3950	1.54370000	12.3400	0.82547000
12.4750	1.66950000	12.4050	1.54090000
12.5200	1.64700000	12.5150	1.64670000
12.6100	1.63690000	12.5750	1.61750000
13.2800	1.17960000	13.1450	1.16050000
13.8400	1.56800000	13.4100	1.16200000
13.9400	1.59330000	13.8600	1.55370000
14.0350	1.61530000	14.0050	1.58670000
14.4150	2.07610000	14.1600	1.58470000
14.5050	2.11500000	14.4450	2.04890000
14.6650	1.26230000	14.6200	1.24080000
14.7300	1.25880000	14.7000	1.25690000
14.8400	1.21190000	14.8350	1.21170000
14.9200	1.11460000	14.9050	1.10880000
15.4100	0.65565000	15.3950	0.65206000
15.4250	0.65691000	15.4150	0.65495000
15.4800	0.66319000	15.4650	0.64622000
15.8000	0.55425000	15.7000	0.54390000
15.9650	0.58231000	15.8050	0.55420000
15.9950	0.55844000	15.9850	0.55641000

Table 3.27: Segment 1 brace (bot: south-west; top: north-west) in-plane deformation

Time	Maximum	Time	Minimum
0.0200	0.00577630	0.0050	0.00577610
0.0800	0.00584360	0.0400	0.00577150
0.2450	0.00603830	0.1100	0.00580710
0.5700	0.00669780	0.2650	0.00602480
0.7700	0.00702160	0.6350	0.00666330
0.8350	0.00692170	0.8100	0.00689220
1.0350	0.00845090	0.8550	0.00688330
1.0850	0.00847060	1.0600	0.00843650
1.1400	0.00829190	1.1350	0.00829160
1.4000	0.00499090	1.3850	0.00496810
1.7450	0.00310640	1.5850	0.00134670
1.7850	0.00312560	1.7600	0.00309610
1.9950	0.00473190	1.8400	0.00285290
2.3300	0.00256050	2.2050	-0.00437160
2.6450	0.01584600	2.4600	-0.00903530
2.9350	0.04010900	2.7000	0.01567200
3.1450	0.03225400	3.0800	0.03002800
3.6400	-0.06031300	3.6200	-0.06098700
4.1250	0.03069600	3.6800	-0.09158100
5.2850	0.02837100	4.8100	-0.09889200
6.0300	-0.17027000	5.9750	-0.17441000
6.0400	-0.17040000	6.0350	-0.17042000
7.0000	-7.95260000	6.3850	-11.58500000
7.6000	-10.61300000	7.5850	-10.61400000
7.8850	-10.68700000	7.7700	-10.80000000
7.9300	-10.70600000	7.9050	-10.72700000
8.4850	-10.87200000	8.2900	-11.30000000
9.1150	-8.96540000	8.5450	-10.89200000
10.4650	-12.34100000	9.8150	-15.43700000
11.8100	-12.37200000	11.0550	-15.52500000
13.1750	-21.02000000	12.6450	-23.85100000
14.2000	-29.40900000	14.1450	-29.44300000
14.3950	-29.81500000	14.3800	-29.88900000

Table 3.28: Segment 1 brace (bot: north-west; top: south-west) in-plane deformation

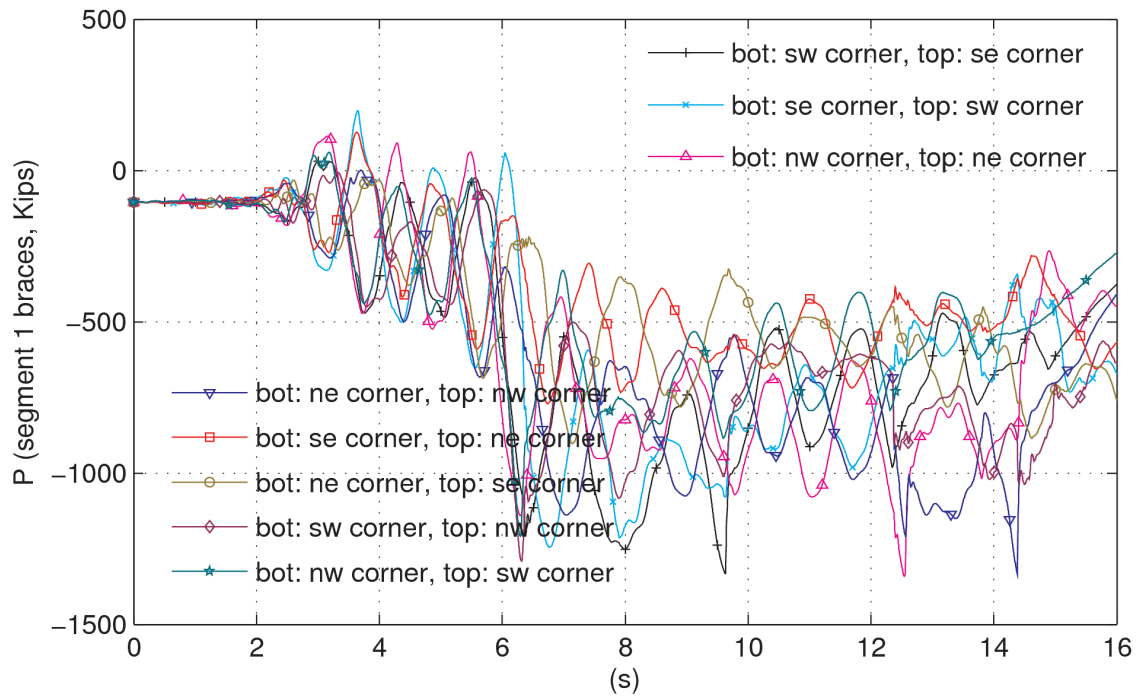


Figure 3.12: Time histories of axial forces in all the braces of Segment 1 of the water-tank under the Takatori ground excitation scaled down by a factor of 0.32.

Time	Maximum	Time	Minimum
0.0400	-104.59000000	0.0050	-104.64000000
0.1100	-103.94000000	0.0550	-104.63000000
0.2050	-104.96000000	0.1900	-105.01000000
0.3600	-101.27000000	0.2250	-105.03000000
0.5050	-104.07000000	0.4750	-104.20000000
0.5800	-103.67000000	0.5350	-104.22000000
0.6550	-102.34000000	0.6050	-103.86000000
0.7100	-103.23000000	0.6950	-103.30000000
0.8050	-101.75000000	0.7500	-103.92000000
0.8550	-100.96000000	0.8150	-101.79000000
1.1000	-102.27000000	0.9800	-105.36000000
1.1350	-102.37000000	1.1200	-102.44000000
1.3050	-99.77200000	1.2250	-105.18000000
1.3600	-100.44000000	1.3400	-100.58000000
1.5050	-103.45000000	1.4700	-104.20000000
1.5700	-105.02000000	1.5500	-105.36000000
1.6700	-110.65000000	1.6450	-111.00000000
1.8100	-108.58000000	1.7150	-112.24000000
2.0250	-113.92000000	1.9800	-115.08000000
2.0800	-112.40000000	2.0350	-113.96000000
2.7000	-119.66000000	2.5200	-167.73000000
3.0050	30.62900000	2.7400	-122.31000000
3.2000	28.58800000	3.0950	2.24810000
4.1600	-184.10000000	3.7650	-471.29000000
4.3600	-39.76800000	4.1750	-188.14000000
5.5600	-24.65300000	5.0650	-486.94000000
6.4150	-1136.00000000	6.3800	-1207.90000000
7.0250	-545.98000000	6.4450	-1163.10000000
7.8400	-1224.60000000	7.7900	-1228.20000000
9.0400	-737.45000000	7.9950	-1251.30000000
9.7250	-1002.30000000	9.6300	-1333.10000000
10.4700	-520.88000000	9.7350	-1003.40000000
11.8400	-523.48000000	11.0300	-913.28000000
12.6700	-769.19000000	12.3500	-981.44000000
13.1700	-472.07000000	12.6900	-770.21000000
14.3050	-637.37000000	13.7300	-774.80000000
14.5700	-530.45000000	14.3350	-637.51000000
16.0000	-377.13000000	14.8850	-657.16000000

Table 3.29: Segment 1 brace (bot: south-west; top: south-east) axial force

Time	Maximum	Time	Minimum
0.0050	-104.64000000	0.0300	-104.67000000
0.0650	-104.51000000	0.0950	-104.65000000
0.1100	-104.62000000	0.2150	-107.32000000
0.3250	-104.00000000	0.5050	-109.60000000
0.5550	-108.66000000	0.5750	-108.81000000
0.6300	-107.72000000	0.6550	-107.92000000
0.6800	-107.66000000	0.7350	-110.28000000
0.8700	-107.23000000	1.0200	-112.75000000
1.0250	-112.74000000	1.0900	-113.48000000
1.1150	-113.20000000	1.1500	-114.17000000
1.1850	-113.49000000	1.1950	-113.51000000
1.3350	-101.43000000	1.3700	-102.50000000
1.4050	-101.84000000	1.4200	-101.92000000
1.5700	-92.22400000	1.5750	-92.22600000
1.6450	-90.06500000	1.6700	-90.43300000
1.7000	-90.04800000	1.7450	-92.35700000
1.7650	-92.10400000	1.8850	-96.54500000
1.8950	-96.50700000	1.9350	-97.41000000
2.2350	-61.15300000	2.3200	-64.78300000
2.4700	-24.86200000	3.1400	-330.02000000
3.6500	197.99000000	4.3550	-501.59000000
4.8800	8.19850000	5.5600	-653.20000000
6.0500	58.04300000	6.3600	-790.86000000
6.3750	-779.43000000	6.4300	-926.09000000
6.4350	-925.81000000	6.7700	-1245.20000000
7.4000	-593.35000000	7.9100	-1215.00000000
8.0700	-1155.50000000	8.1450	-1164.40000000
8.6850	-889.75000000	9.0950	-1012.80000000
9.1650	-1005.10000000	9.3550	-1050.30000000
9.5000	-1035.90000000	9.6300	-1079.30000000
9.7050	-860.30000000	9.7300	-870.93000000
9.7950	-811.69000000	9.9550	-861.66000000
10.0700	-842.43000000	10.3000	-921.38000000
10.3750	-916.86000000	10.4600	-920.27000000
10.9350	-642.16000000	11.7050	-980.46000000
12.3600	-652.31000000	12.3750	-658.77000000
12.4050	-574.52000000	12.4600	-640.04000000
12.4950	-619.31000000	12.5350	-642.56000000
12.5450	-641.91000000	12.5550	-643.42000000
12.6350	-518.39000000	12.6550	-522.37000000
12.7050	-496.07000000	12.9400	-558.95000000
12.9850	-557.10000000	13.1750	-613.54000000
13.5350	-485.02000000	13.7500	-607.43000000
13.7800	-605.74000000	13.8100	-680.04000000
13.8400	-667.14000000	13.9600	-699.05000000
14.3800	-342.91000000	14.4650	-484.16000000
14.4800	-483.47000000	14.5450	-532.09000000
14.5750	-525.36000000	14.5850	-526.57000000
14.7600	-422.14000000	14.8950	-456.83000000
14.9500	-430.14000000	14.9750	-480.21000000
15.0000	-446.65000000	15.2400	-732.42000000
15.4000	-686.15000000	15.5000	-707.30000000
15.8150	-631.69000000	15.8300	-632.85000000
15.8600	-630.91000000	16.0000	-671.83000000

Table 3.30: Segment 1 brace (bot: south-east; top: south-west) axial force

Time	Maximum	Time	Minimum
0.0400	-104.18000000	0.0050	-104.22000000
0.1100	-103.41000000	0.0500	-104.20000000
0.2100	-104.23000000	0.1850	-104.34000000
0.3650	-99.96100000	0.2200	-104.25000000
0.5100	-102.06000000	0.4700	-102.38000000
0.5800	-101.44000000	0.5300	-102.11000000
0.6550	-100.09000000	0.6000	-101.60000000
0.7150	-100.77000000	0.6950	-100.94000000
0.8050	-99.06800000	0.7500	-101.33000000
0.8600	-98.22800000	0.8150	-99.10100000
0.8850	-98.26200000	0.8750	-98.26700000
1.1000	-95.89800000	0.9750	-100.37000000
1.1350	-96.13200000	1.1250	-96.14800000
1.3000	-99.39200000	1.2400	-101.31000000
1.6750	-119.03000000	1.6450	-119.63000000
1.8200	-112.55000000	1.7050	-119.71000000
1.8450	-112.55000000	1.8300	-112.57000000
2.0100	-116.88000000	1.9800	-117.34000000
2.3500	-149.66000000	2.2500	-154.68000000
3.1650	113.12000000	2.5050	-181.98000000
4.2900	90.50500000	3.7250	-472.85000000
4.9900	-497.96000000	4.8650	-524.08000000
5.4900	61.38500000	5.0000	-498.05000000
6.9550	-418.33000000	6.2950	-1140.20000000
7.6000	-951.11000000	7.5550	-951.98000000
7.9550	-822.67000000	7.6500	-952.14000000
8.1200	-806.82000000	7.9950	-824.45000000
8.4550	-913.84000000	8.3550	-926.27000000
9.0650	-621.58000000	8.5550	-924.68000000
10.4650	-686.65000000	9.7850	-1071.50000000
11.6900	-628.22000000	11.0450	-1078.90000000
12.4250	-1202.80000000	12.4050	-1215.30000000
12.6650	-979.25000000	12.5450	-1341.90000000
12.8650	-866.42000000	12.6700	-979.48000000
13.1350	-783.42000000	12.9250	-872.29000000
13.4200	-768.89000000	13.2700	-816.48000000
14.2450	-851.30000000	13.8000	-1019.00000000
14.4600	-628.18000000	14.3650	-890.75000000
14.6300	-463.03000000	14.4850	-639.09000000
14.9000	-264.71000000	14.6700	-482.25000000
15.7850	-397.32000000	15.3900	-531.13000000

Table 3.31: Segment 1 brace (bot: north-west; top: north-east) axial force

Time	Maximum	Time	Minimum
0.0050	-104.22000000	0.0350	-104.26000000
0.0700	-104.04000000	0.0900	-104.13000000
0.1050	-104.10000000	0.2100	-106.57000000
0.3250	-102.83000000	0.5000	-107.59000000
0.5550	-106.45000000	0.5750	-106.55000000
0.6300	-105.44000000	0.6550	-105.63000000
0.6800	-105.32000000	0.7300	-107.73000000
0.9100	-103.99000000	1.0100	-107.05000000
1.0400	-106.78000000	1.0900	-107.07000000
1.1150	-106.80000000	1.1550	-108.02000000
1.1750	-107.79000000	1.2050	-108.37000000
1.3300	-102.25000000	1.3750	-104.35000000
1.4000	-104.03000000	1.4300	-104.41000000
1.4750	-102.43000000	1.5000	-102.84000000
1.5550	-99.17900000	1.5850	-99.90000000
1.6400	-98.82200000	1.6650	-99.01000000
1.7050	-97.93000000	1.7400	-98.84700000
1.7750	-97.61000000	1.8050	-98.51600000
1.8300	-98.26900000	1.8800	-99.46600000
1.9000	-99.24400000	1.9300	-99.80900000
2.0650	-90.72300000	2.0800	-90.83800000
2.1300	-88.88400000	2.1450	-88.96400000
2.2350	-81.29700000	2.2550	-81.51100000
2.4600	-43.83800000	2.4750	-43.98700000
2.5150	-42.02600000	2.7100	-91.55100000
2.7350	-91.01500000	3.1950	-288.96000000
3.5350	-23.53600000	3.5850	-44.32700000
3.7050	0.94254000	4.4050	-500.18000000
5.0600	-81.42600000	5.6400	-682.74000000
6.0500	-318.61000000	6.3600	-593.13000000
6.3750	-585.19000000	7.0500	-1139.10000000
7.7600	-628.76000000	7.9050	-660.74000000
8.0000	-647.64000000	8.2250	-758.83000000
8.3000	-754.33000000	8.9850	-1075.20000000
9.7100	-553.10000000	9.7300	-556.26000000
9.7750	-542.06000000	10.4750	-943.49000000
10.9700	-685.04000000	11.1100	-701.82000000
11.1450	-701.27000000	11.7050	-1021.50000000
12.3300	-670.47000000	12.3800	-920.58000000
12.3950	-908.04000000	12.5600	-1208.40000000
12.6200	-1009.70000000	12.6550	-1046.50000000
12.6850	-1030.90000000	12.9000	-1138.80000000
13.0500	-1100.30000000	13.3800	-1150.10000000
13.8600	-800.76000000	14.3800	-1333.90000000
14.9600	-703.71000000	14.9700	-705.39000000

Table 3.32: Segment 1 brace (bot: north-east; top: north-west) axial force

Time	Maximum	Time	Minimum
0.0400	-104.39000000	0.0050	-104.42000000
0.1100	-104.07000000	0.0700	-104.55000000
0.3450	-103.90000000	0.2200	-106.53000000
0.6500	-107.02000000	0.5050	-108.61000000
0.8600	-106.57000000	0.7550	-109.57000000
1.1200	-110.74000000	1.0050	-112.87000000
1.3700	-102.52000000	1.1950	-112.51000000
1.5700	-88.63900000	1.4050	-103.11000000
1.8400	-90.18600000	1.7250	-97.59900000
2.1950	-70.86300000	1.9950	-102.09000000
2.4500	-31.54800000	2.3050	-89.11300000
2.7150	-102.16000000	2.6150	-114.39000000
3.0500	-230.52000000	2.9400	-261.67000000
3.6350	126.04000000	3.1800	-271.14000000
4.2250	-314.83000000	4.2000	-319.52000000
4.8350	-44.54700000	4.3750	-418.48000000
6.0700	-163.95000000	5.5850	-591.54000000
6.1800	-149.10000000	6.0900	-166.14000000
7.4100	-306.57000000	6.7400	-771.03000000
8.0900	-698.18000000	7.9300	-733.83000000
8.6100	-390.11000000	8.1050	-698.24000000
9.1450	-585.08000000	9.1000	-586.13000000
9.6500	-580.77000000	9.3450	-634.98000000
9.8050	-543.72000000	9.6800	-593.47000000
10.3750	-638.02000000	10.2550	-654.13000000
11.0000	-425.35000000	10.4750	-644.63000000
12.3600	-431.02000000	11.6950	-718.90000000
12.4000	-384.48000000	12.3700	-434.65000000
12.4650	-405.46000000	12.4300	-426.54000000
12.6000	-431.32000000	12.5750	-444.92000000
12.6700	-459.42000000	12.6500	-462.54000000
13.1750	-440.78000000	12.9150	-513.08000000
13.7800	-506.70000000	13.6200	-530.47000000
13.8550	-520.64000000	13.8250	-530.99000000
14.0750	-506.19000000	13.9000	-534.90000000
14.3850	-358.52000000	14.0900	-506.46000000
14.6150	-281.77000000	14.4350	-388.56000000
14.6650	-283.42000000	14.6450	-283.57000000
14.9750	-410.98000000	14.9600	-414.99000000
16.0000	-568.40000000	15.6700	-655.96000000

Table 3.33: Segment 1 brace (bot: south-east; top: north-east) axial force

Time	Maximum	Time	Minimum
0.0050	-104.42000000	0.0350	-104.44000000
0.0800	-103.97000000	0.2100	-105.86000000
0.3550	-102.32000000	0.4900	-105.67000000
0.5750	-104.84000000	0.5850	-104.85000000
0.6700	-103.70000000	0.7350	-105.10000000
0.8450	-102.36000000	0.8500	-102.37000000
0.8950	-101.27000000	0.9250	-101.74000000
0.9400	-101.70000000	1.0000	-102.35000000
1.0150	-102.33000000	1.0650	-102.69000000
1.0800	-102.66000000	1.2250	-107.14000000
1.3350	-102.67000000	1.3700	-103.54000000
1.4050	-102.83000000	1.5800	-108.34000000
1.7200	-101.57000000	1.8900	-109.01000000
2.0350	-101.67000000	2.1650	-113.44000000
2.3150	-79.94500000	2.4500	-110.00000000
2.6050	-31.71400000	2.7700	-117.09000000
2.8950	-76.60500000	3.0950	-251.54000000
3.1950	-220.11000000	3.3250	-263.54000000
3.7750	-41.58600000	3.8800	-49.29600000
3.9900	-33.03600000	4.4800	-379.75000000
4.9700	-127.22000000	5.0500	-145.15000000
5.1900	-91.41700000	5.6900	-686.71000000
6.1700	-241.88000000	6.2550	-248.21000000
6.3300	-225.77000000	6.3600	-252.20000000
6.3800	-231.06000000	6.4050	-249.19000000
6.4400	-220.44000000	6.4800	-243.29000000
6.5050	-238.97000000	7.1450	-903.67000000
7.9250	-350.92000000	8.6450	-742.79000000
8.7300	-734.09000000	8.9050	-781.05000000
9.6300	-345.85000000	9.6500	-348.57000000
9.6850	-326.18000000	10.4150	-654.21000000
10.9000	-484.55000000	10.9350	-485.10000000
10.9650	-484.88000000	11.8050	-648.16000000
12.3500	-449.50000000	12.4000	-505.94000000
12.4250	-478.96000000	12.6050	-615.53000000
12.7650	-541.98000000	13.2500	-781.93000000
13.8250	-451.84000000	14.0600	-605.65000000
14.1750	-579.47000000	14.3900	-770.38000000
14.4300	-760.60000000	14.6100	-885.56000000
14.9600	-731.04000000	14.9750	-735.37000000
15.0000	-725.32000000	15.0150	-727.14000000
15.0550	-715.28000000	15.1000	-725.48000000
15.1200	-723.98000000	15.1700	-730.13000000
15.4950	-638.84000000	15.6900	-649.66000000
15.7300	-649.50000000	16.0000	-759.37000000

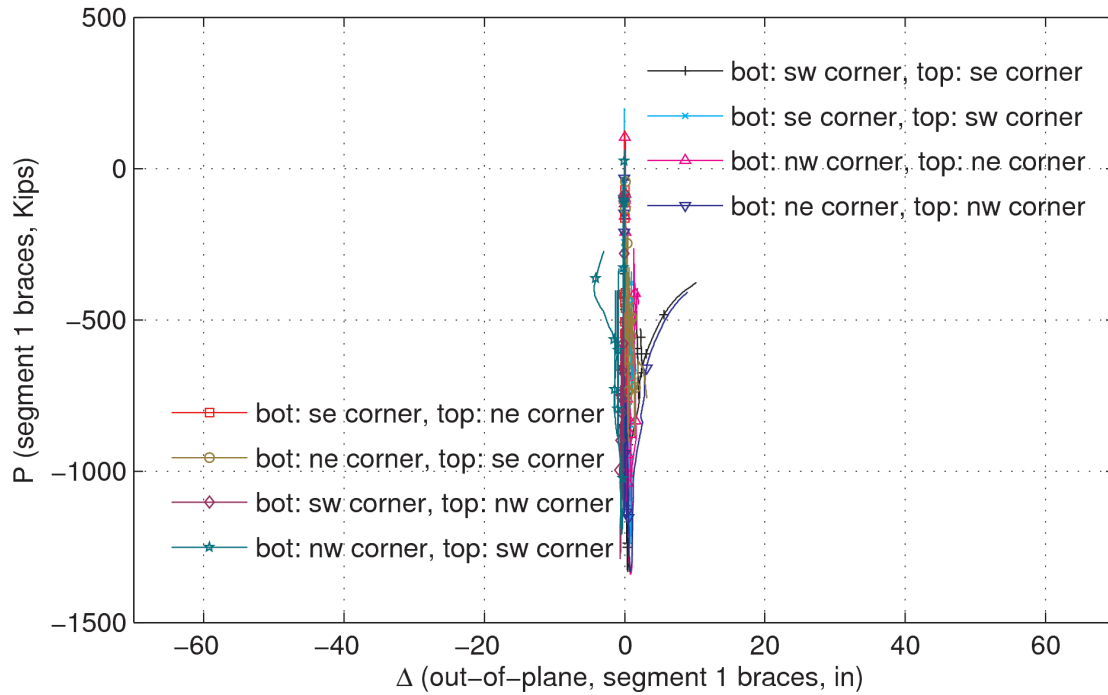
Table 3.34: Segment 1 brace (bot: north-east; top: south-east) axial force

Time	Maximum	Time	Minimum
0.0400	-104.38000000	0.0050	-104.42000000
0.1100	-103.97000000	0.0700	-104.55000000
0.3500	-102.14000000	0.2150	-105.66000000
0.6550	-104.17000000	0.5000	-105.98000000
0.8600	-103.17000000	0.7550	-106.52000000
1.1250	-105.64000000	1.0000	-109.29000000
1.3150	-99.65500000	1.1850	-106.61000000
1.5650	-96.15300000	1.4150	-104.12000000
1.8550	-100.53000000	1.7300	-109.05000000
2.1400	-94.74100000	1.9900	-108.74000000
2.4450	-93.42600000	2.3100	-137.27000000
2.7750	-95.89200000	2.5950	-174.03000000
3.0850	-16.58600000	2.9050	-129.50000000
3.3250	-5.95870000	3.1950	-41.44200000
3.9450	-421.61000000	3.7900	-449.98000000
4.5050	-170.58000000	4.0150	-426.16000000
5.7000	-63.49500000	5.1650	-442.73000000
6.3850	-1043.30000000	6.3150	-1292.00000000
7.1450	-501.14000000	6.4300	-1095.50000000
8.8750	-594.52000000	7.8950	-1083.70000000
10.3800	-573.93000000	9.6050	-1010.70000000
10.6550	-570.61000000	10.5050	-589.48000000
11.2650	-662.57000000	11.1200	-679.73000000
11.8250	-607.39000000	11.3300	-663.91000000
12.4050	-868.72000000	12.3800	-907.02000000
12.5150	-889.79000000	12.4700	-922.96000000
12.5700	-863.34000000	12.5200	-889.96000000
13.4300	-713.68000000	12.6150	-901.34000000
13.8550	-969.72000000	13.8350	-975.19000000
14.2850	-837.01000000	13.9300	-1021.00000000
14.4450	-992.81000000	14.4050	-1033.40000000
14.5650	-1015.20000000	14.5000	-1037.70000000
14.6250	-937.70000000	14.5750	-1021.10000000
14.7150	-938.26000000	14.6600	-961.20000000
14.8400	-882.81000000	14.7200	-938.33000000
14.9100	-846.26000000	14.8500	-884.67000000
15.0050	-705.26000000	14.9200	-847.21000000
15.0950	-736.95000000	15.0550	-753.56000000
15.4700	-716.05000000	15.2900	-784.71000000
15.7800	-564.48000000	15.4800	-721.77000000

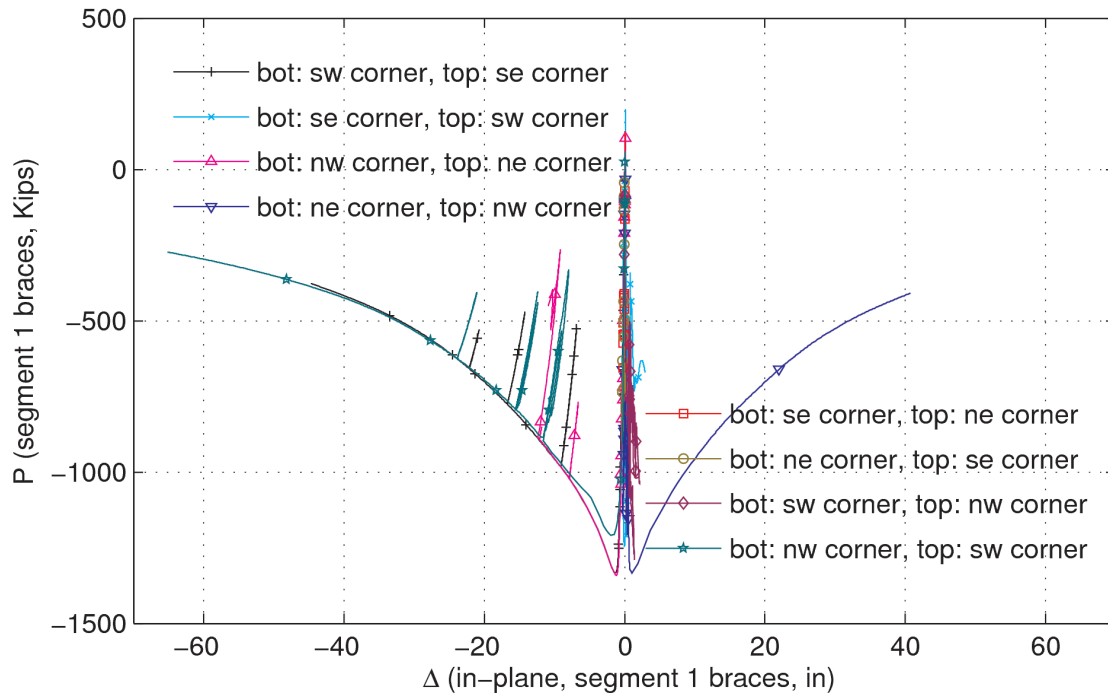
Table 3.35: Segment 1 brace (bot: south-west; top: north-west) axial force

Time	Maximum	Time	Minimum
0.0050	-104.42000000	0.0350	-104.44000000
0.0900	-103.95000000	0.1000	-103.96000000
0.1300	-103.87000000	0.2050	-105.08000000
0.3700	-100.46000000	0.4850	-103.16000000
0.5750	-102.09000000	0.5850	-102.10000000
0.6700	-100.86000000	0.7350	-102.11000000
0.8950	-97.84100000	0.9250	-98.31900000
0.9450	-98.22700000	0.9900	-98.89800000
1.0900	-98.04400000	1.2300	-101.36000000
1.3150	-99.30300000	1.6150	-116.50000000
1.7150	-112.81000000	1.8750	-117.93000000
2.0150	-108.64000000	2.2150	-140.78000000
2.3100	-127.63000000	2.4550	-171.77000000
2.6200	-89.30700000	2.7250	-110.11000000
2.9350	50.97800000	3.0500	8.62620000
3.1850	59.71600000	3.7500	-440.12000000
4.3000	-53.92700000	4.8200	-476.75000000
4.9700	-429.58000000	5.0200	-434.60000000
5.4950	-29.01800000	6.2950	-1208.20000000
6.4350	-845.84000000	6.4400	-846.02000000
6.9850	-330.53000000	7.5200	-815.54000000
7.6450	-795.85000000	7.6750	-796.03000000
7.7000	-795.97000000	7.7300	-796.12000000
7.8850	-750.93000000	7.9050	-756.42000000
7.9300	-753.21000000	8.3050	-866.14000000
8.4650	-825.79000000	8.5650	-837.64000000
9.1300	-532.67000000	9.6000	-886.16000000
10.4700	-438.53000000	11.0050	-794.08000000
11.8050	-402.36000000	12.3100	-792.61000000
13.1750	-403.62000000	13.7450	-625.26000000
14.2150	-538.87000000	14.2500	-539.90000000
14.3950	-529.01000000	14.4100	-533.91000000

Table 3.36: Segment 1 brace (bot: north-west; top: south-west) axial force

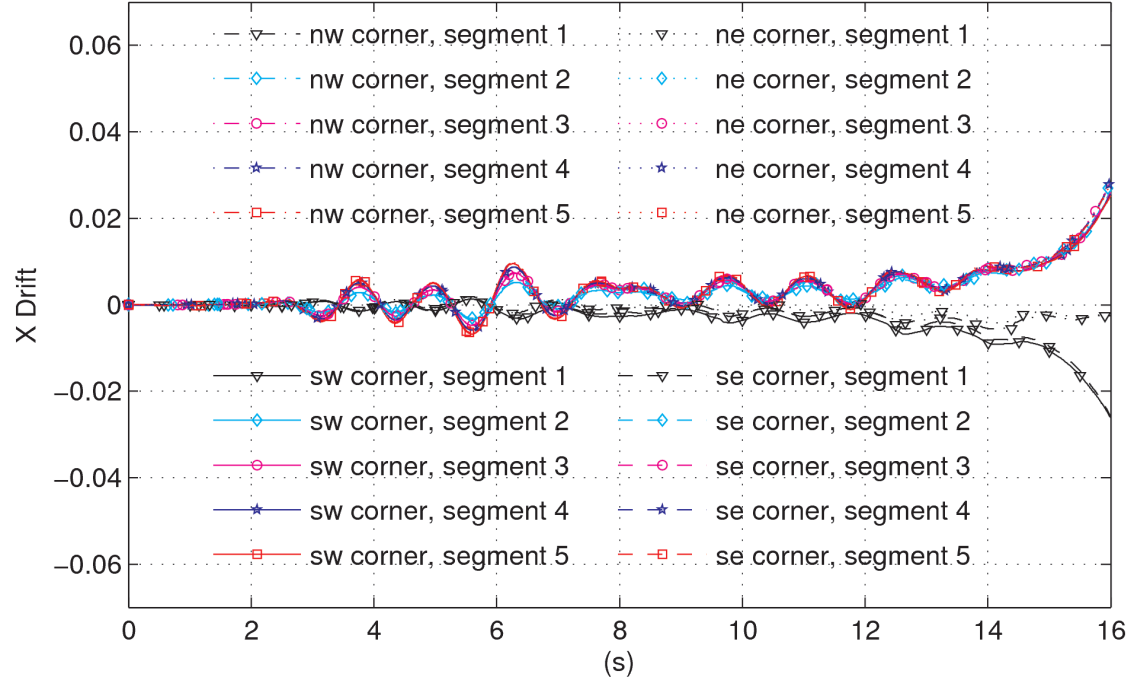


(a)

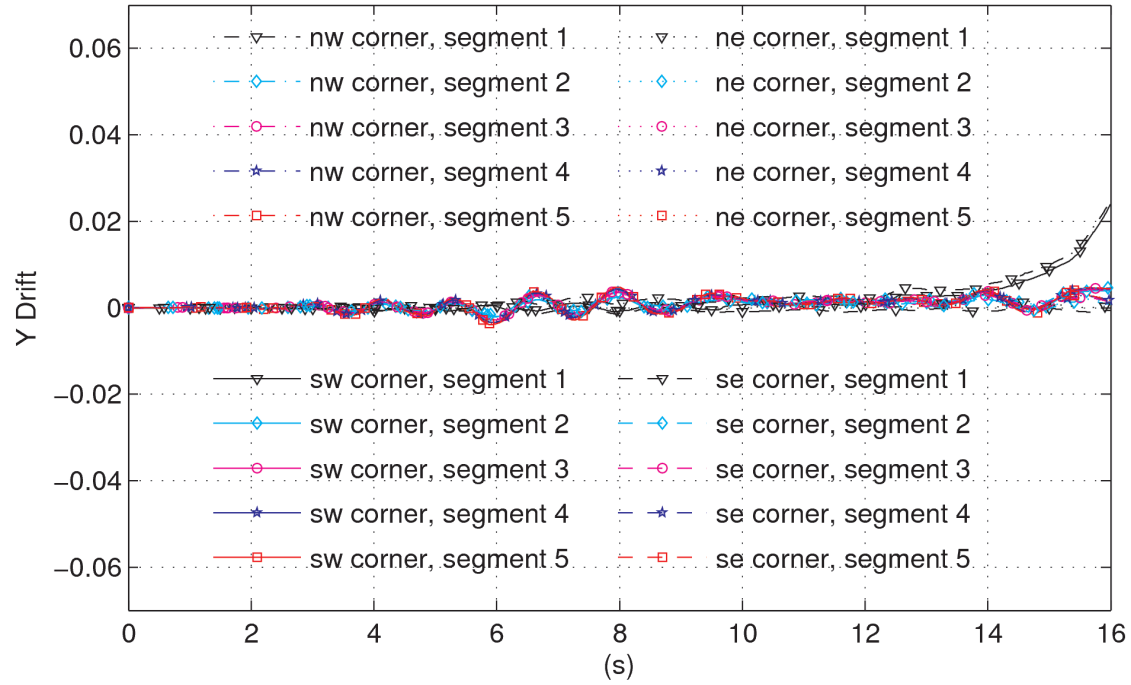


(b)

Figure 3.13: Axial force versus in-plane and out-of-plane deformation response histories of all braces in Segment 1 of the water-tank under the Takatori ground excitation scaled down by a factor of 0.32.



(a)



(b)

Figure 3.14: Time histories of X and Y direction drifts in the five segments of the water-tank under the Takatori ground excitation scaled down by a factor of 0.32.

Time	Maximum	Time	Minimum
0.0350	-0.00010204	0.0050	-0.00010214
0.1500	-0.00010009	0.0600	-0.00010221
0.2150	-0.00009950	0.1750	-0.00010059
0.2950	-0.00009576	0.2300	-0.00009966
0.3650	-0.00009338	0.3150	-0.00009599
0.4250	-0.00009312	0.3950	-0.00009374
0.5050	-0.00009338	0.4650	-0.00009440
0.5800	-0.00009298	0.5450	-0.00009398
0.6600	-0.00009122	0.6100	-0.00009386
0.7200	-0.00009119	0.6900	-0.00009274
0.8000	-0.00008895	0.7550	-0.00009227
0.8550	-0.00008841	0.8200	-0.00008972
0.9400	-0.00009090	0.9300	-0.00009095
1.1050	-0.00008449	0.9800	-0.00009354
1.1450	-0.00008319	1.1150	-0.00008455
1.1950	-0.00008633	1.1900	-0.00008635
1.2950	-0.00008620	1.2450	-0.00008860
1.7450	-0.00014182	1.7150	-0.00014314
1.8700	-0.00013320	1.7600	-0.00014207
1.9350	-0.00013419	1.9100	-0.00013491
2.0050	-0.00013688	1.9800	-0.00013769
3.1800	0.00075741	2.5150	-0.00037884
3.7450	-0.00151763	3.7400	-0.00151784
4.3600	0.00071797	3.7550	-0.00151778
5.5800	0.00131769	5.0200	-0.00129384
6.4250	-0.00316188	6.3800	-0.00343031
7.0050	-0.00031341	6.4350	-0.00316688
7.9050	-0.00267541	7.7400	-0.00281191
7.9500	-0.00267525	7.9250	-0.00267900
8.1800	-0.00259216	8.0050	-0.00269166
9.0450	-0.00106272	8.2700	-0.00261450
10.4550	-0.00206991	9.7900	-0.00423344
11.7850	-0.00199369	11.0300	-0.00405031
12.6700	-0.00676875	12.6300	-0.00680625
13.1900	-0.00500438	12.6850	-0.00677188
14.2950	-0.00905375	14.1350	-0.00916625
14.5650	-0.00847594	14.3350	-0.00905531

Table 3.37: Segment 1 south-west corner X direction interstory drift ratio

Time	Maximum	Time	Minimum
0.0050	-0.00000950	0.0400	-0.00000960
0.0700	-0.00000942	0.5250	-0.00003035
0.5500	-0.00003017	0.5800	-0.00003065
0.6150	-0.00002971	0.6700	-0.00003145
0.6900	-0.00003108	0.7300	-0.00003353
0.7500	-0.00003333	0.8000	-0.00003532
0.8250	-0.00003442	0.8550	-0.00003534
0.8750	-0.00003506	0.9000	-0.00003553
0.9200	-0.00003518	0.9550	-0.00003641
0.9800	-0.00003560	1.1600	-0.00005349
1.1800	-0.00005302	1.2000	-0.00005362
1.7150	0.00007711	1.7400	0.00007639
1.7700	0.00007751	1.9950	0.00004658
2.5150	0.00052113	3.1600	-0.00182266
3.7600	0.00281666	4.3600	-0.00186047
4.9700	0.00223003	5.5900	-0.00344059
6.3100	0.00516003	6.3400	0.00511563
6.3650	0.00518969	6.9850	-0.00097294
7.7000	0.00337016	7.9800	0.00281969
7.9850	0.00281987	7.9900	0.00281984
8.0450	0.00282512	8.1150	0.00281538
8.3000	0.00296688	9.0450	0.00037647
9.7800	0.00447750	10.4400	0.00088469
11.0350	0.00437469	11.7650	0.00064675
12.6250	0.00626094	13.2350	0.00381344
14.1550	0.00801938	14.3050	0.00797219
14.3150	0.00797250	14.3800	0.00796562
14.4050	0.00800188	14.5400	0.00784813

Table 3.38: Segment 2 south-west corner X direction interstory drift ratio

Time	Maximum	Time	Minimum
0.0050	0.00000443	0.0500	0.00000432
0.0750	0.00000444	0.5500	-0.00002558
0.5650	-0.00002553	0.5900	-0.00002571
0.6250	-0.00002542	0.6800	-0.00002735
0.6950	-0.00002728	0.9100	-0.00003384
0.9300	-0.00003355	0.9600	-0.00003398
0.9850	-0.00003333	1.2050	-0.00006063
1.7800	0.00013215	1.9950	0.00007656
2.5250	0.00075678	3.1600	-0.00255034
3.7650	0.00411094	4.3600	-0.00262625
4.9700	0.00339375	5.6000	-0.00478969
6.3000	0.00730437	6.9750	-0.00170159
7.6800	0.00434062	8.0150	0.00340313
8.3000	0.00366094	9.0350	0.00013959
9.6500	0.00525250	9.6650	0.00523500
9.7600	0.00542063	10.4350	0.00046697
11.0400	0.00531437	11.7650	0.00009534
12.5650	0.00663625	13.2650	0.00349406
14.1650	0.00802000	14.3900	0.00786375
14.4150	0.00790781	14.4250	0.00790719
14.4450	0.00791250	14.5100	0.00786594

Table 3.39: Segment 3 south-west corner X direction interstory drift ratio

Time	Maximum	Time	Minimum
0.0050	0.00000283	0.0600	0.00000268
0.0850	0.00000280	0.5500	-0.00003584
0.5750	-0.00003562	0.6100	-0.00003637
0.6450	-0.00003584	0.6900	-0.00003822
0.7150	-0.00003733	0.9200	-0.00004713
0.9450	-0.00004658	0.9700	-0.00004695
1.0000	-0.00004593	1.2150	-0.00008275
1.7950	0.00017003	1.9950	0.00008570
2.5450	0.00095384	3.1550	-0.00326531
3.7650	0.00506906	4.3550	-0.00347156
4.9700	0.00432781	5.6000	-0.00585250
6.2850	0.00872031	6.9650	-0.00257516
7.6450	0.00493188	8.0200	0.00351312
8.3000	0.00392687	9.0300	-0.00031103
9.6650	0.00595281	9.6800	0.00594656
9.7450	0.00611438	10.4300	-0.00001406
11.0400	0.00604344	11.7650	-0.00051681
12.4650	0.00711437	12.4950	0.00709750
12.5150	0.00709844	12.6300	0.00691125
12.6500	0.00691875	13.2750	0.00323594
14.2100	0.00818437	14.2150	0.00818187
14.2200	0.00818281	14.4100	0.00788906
14.4400	0.00791250	14.5000	0.00784875

Table 3.40: Segment 4 south-west corner X direction interstory drift ratio

Time	Maximum	Time	Minimum
0.0050	-0.00010182	0.0600	-0.00010192
0.0950	-0.00010146	0.5550	-0.00014753
0.5700	-0.00014741	0.6100	-0.00014879
0.6500	-0.00014699	0.6900	-0.00014918
0.7200	-0.00014809	0.7650	-0.00015086
0.7900	-0.00015031	0.9300	-0.00015979
0.9450	-0.00015969	0.9750	-0.00016100
1.0100	-0.00015922	1.2250	-0.00020814
1.7950	0.00009847	1.9950	-0.00001716
2.5700	0.00102747	3.1450	-0.00390750
3.7600	0.00568156	4.3450	-0.00423531
4.9650	0.00495219	5.6050	-0.00676156
6.2650	0.00948438	6.9500	-0.00331594
7.6200	0.00534250	8.0200	0.00344219
8.2550	0.00401531	8.3350	0.00400312
8.3400	0.00400313	9.0150	-0.00072200
9.6700	0.00644375	9.6850	0.00641688
9.7400	0.00654781	10.4250	-0.00050753
11.0500	0.00651063	11.7700	-0.00110431
12.3750	0.00723875	12.3850	0.00722375
12.4550	0.00753875	12.6300	0.00703844
12.6550	0.00704875	13.2750	0.00289156
13.9300	0.00812812	14.0400	0.00807500
14.2300	0.00827188	14.4150	0.00776875
14.4350	0.00778750	14.4800	0.00774062
14.4850	0.00774063	14.4900	0.00773750
14.5800	0.00789375	14.5950	0.00788125

Table 3.41: Segment 5 south-west corner X direction interstory drift ratio

Time	Maximum	Time	Minimum
0.0350	0.00010223	0.0050	0.00010213
0.2150	0.00010790	0.0650	0.00010193
0.2850	0.00010692	0.2650	0.00010683
0.5050	0.00011566	0.3200	0.00010561
0.5750	0.00011489	0.5500	0.00011430
0.6600	0.00011444	0.6200	0.00011329
0.7300	0.00011799	0.6850	0.00011361
0.7900	0.00011789	0.7600	0.00011706
0.8500	0.00011559	0.8300	0.00011514
0.8900	0.00011532	0.8750	0.00011521
0.9600	0.00011844	0.9100	0.00011511
1.1000	0.00012778	0.9700	0.00011838
1.1500	0.00013006	1.1150	0.00012763
1.1950	0.00012818	1.1850	0.00012813
1.7450	0.00005527	1.7050	0.00005168
1.8850	0.00006842	1.7650	0.00005479
1.9400	0.00007085	1.8950	0.00006838
3.1550	0.00103575	2.5100	-0.00019401
4.3550	0.00118325	3.7200	-0.00129163
5.5700	0.00188150	4.9500	-0.00092531
6.3550	-0.00181525	6.2600	-0.00197547
6.9650	0.00105981	6.3750	-0.00195269
7.9150	-0.00068609	7.6650	-0.00110991
7.9450	-0.00068256	7.9200	-0.00068634
8.1450	-0.00071044	8.0550	-0.00073772
9.0650	0.00036459	8.3300	-0.00090294
9.7250	-0.00249603	9.7150	-0.00249716
10.4500	-0.00076569	9.7950	-0.00270919
11.7500	-0.00063591	11.0150	-0.00271906
12.6650	-0.00556906	12.6350	-0.00560094
13.1950	-0.00394687	12.6950	-0.00558469
14.2350	-0.00805781	14.1750	-0.00806125
14.5550	-0.00748531	14.3750	-0.00811781

Table 3.42: Segment 1 south-east corner X direction interstory drift ratio

Time	Maximum	Time	Minimum
0.0050	0.00000951	0.0450	0.00000940
0.0700	0.00000961	0.5250	-0.00001058
0.5500	-0.00001043	0.5800	-0.00001092
0.6150	-0.00001011	0.6650	-0.00001190
0.6900	-0.00001141	0.7300	-0.00001364
0.7500	-0.00001336	0.8000	-0.00001561
0.8250	-0.00001483	0.8550	-0.00001589
0.8800	-0.00001552	0.9000	-0.00001576
0.9250	-0.00001514	0.9500	-0.00001587
0.9800	-0.00001474	1.1600	-0.00003272
1.1800	-0.00003226	1.2050	-0.00003291
1.7200	0.00009467	1.7450	0.00009403
1.7700	0.00009495	1.9600	0.00006553
1.9750	0.00006574	2.0000	0.00006536
2.5200	0.00053682	3.1600	-0.00174178
3.7650	0.00295459	4.3650	-0.00165028
4.9750	0.00240525	5.5900	-0.00314572
6.3750	0.00620919	6.9950	-0.00021953
7.7250	0.00443222	8.1300	0.00400519
8.2750	0.00408609	9.0400	0.00120953
9.6450	0.00531788	9.6700	0.00520984
9.7650	0.00534872	10.4400	0.00151544
11.0400	0.00513072	11.7700	0.00129166
12.6150	0.00679875	13.2400	0.00423406
14.1400	0.00848594	14.3800	0.00832281
14.4150	0.00838969	14.5350	0.00831469

Table 3.43: Segment 2 south-east corner X direction interstory drift ratio

Time	Maximum	Time	Minimum
0.0050	-0.00000441	0.0500	-0.00000453
0.0750	-0.00000437	0.5450	-0.00003426
0.5650	-0.00003417	0.5900	-0.00003438
0.6300	-0.00003403	0.6800	-0.00003591
0.6950	-0.00003584	0.9100	-0.00004203
0.9300	-0.00004169	0.9550	-0.00004206
0.9850	-0.00004144	1.2050	-0.00006923
1.7800	0.00012285	1.9950	0.00006796
2.5350	0.00074959	3.1550	-0.00255881
3.7750	0.00411219	4.3600	-0.00256419
4.9700	0.00344313	5.6000	-0.00469969
6.3050	0.00752625	6.9750	-0.00136006
7.6750	0.00465031	8.0150	0.00371344
8.3000	0.00395438	9.0350	0.00046603
9.6550	0.00556281	9.6650	0.00555781
9.7600	0.00575344	10.4350	0.00082572
11.0400	0.00564813	11.7650	0.00045919
12.5650	0.00699125	13.2650	0.00386281
14.1700	0.00837937	14.3900	0.00822156
14.4150	0.00825937	14.4300	0.00825594
14.4450	0.00825719	14.5100	0.00820531

Table 3.44: Segment 3 south-east corner X direction interstory drift ratio

Time	Maximum	Time	Minimum
0.0050	-0.00000280	0.0600	-0.00000295
0.0850	-0.00000277	0.5500	-0.00004102
0.5750	-0.00004078	0.6100	-0.00004156
0.6450	-0.00004100	0.6900	-0.00004332
0.7200	-0.00004234	0.9150	-0.00005156
0.9500	-0.00005076	0.9700	-0.00005097
1.0000	-0.00004992	1.2150	-0.00008756
1.7900	0.00016301	1.9900	0.00008052
2.5550	0.00095728	3.1500	-0.00325719
3.7600	0.00506344	4.3550	-0.00346156
4.9700	0.00431937	5.6050	-0.00586188
6.2850	0.00877406	6.9650	-0.00244534
7.6450	0.00506531	8.0200	0.00367344
8.2900	0.00404313	9.0250	-0.00019891
9.6650	0.00609969	9.6800	0.00609125
9.7450	0.00624937	10.4300	0.00010644
11.0400	0.00615156	11.7650	-0.00038575
12.4650	0.00724313	12.5050	0.00722375
12.5100	0.00722406	12.6300	0.00703812
12.6500	0.00704656	13.2700	0.00334438
14.1950	0.00831469	14.2000	0.00831219
14.2050	0.00831344	14.4100	0.00799531
14.4400	0.00801969	14.5000	0.00795125

Table 3.45: Segment 4 south-east corner X direction interstory drift ratio

Time	Maximum	Time	Minimum
0.0050	0.00010185	0.0700	0.00010158
0.0850	0.00010162	0.4100	0.00006659
0.4250	0.00006663	0.6200	0.00005656
0.6450	0.00005685	0.6850	0.00005522
0.7250	0.00005861	0.9150	0.00004311
1.0100	0.00004934	1.2300	0.00000247
1.8000	0.00029850	2.0000	0.00018451
2.5650	0.00120019	3.1550	-0.00369156
3.7650	0.00584437	4.3500	-0.00404562
4.9700	0.00509000	5.6000	-0.00657000
6.2750	0.00967687	6.9600	-0.00314125
7.6250	0.00549844	8.0250	0.00373063
8.2450	0.00423500	9.0150	-0.00057444
9.6650	0.00664281	9.6850	0.00661375
9.7400	0.00674969	10.4250	-0.00030591
11.0500	0.00665719	11.7700	-0.00088284
12.3700	0.00736906	12.3850	0.00735094
12.4550	0.00768875	12.6300	0.00723125
12.6500	0.00723594	13.2750	0.00306188
13.9700	0.00832813	14.0500	0.00829063
14.1900	0.00839063	14.1950	0.00839062
14.2150	0.00839688	14.4150	0.00788437
14.4400	0.00789375	14.4900	0.00784375
14.5750	0.00798750	14.5950	0.00796875

Table 3.46: Segment 5 south-east corner X direction interstory drift ratio

Time	Maximum	Time	Minimum
0.0350	-0.00010309	0.0050	-0.00010319
0.1500	-0.00010094	0.0600	-0.00010324
0.2150	-0.00010018	0.1750	-0.00010140
0.3000	-0.00009604	0.2300	-0.00010027
0.3700	-0.00009324	0.3100	-0.00009617
0.4250	-0.00009272	0.3950	-0.00009346
0.5100	-0.00009247	0.4600	-0.00009380
0.5800	-0.00009177	0.5400	-0.00009290
0.6600	-0.00008996	0.6100	-0.00009260
0.7200	-0.00008971	0.6900	-0.00009140
0.8000	-0.00008716	0.7550	-0.00009063
0.8550	-0.00008656	0.8200	-0.00008792
0.9450	-0.00008733	0.9200	-0.00008786
1.1050	-0.00007794	0.9750	-0.00008903
1.1450	-0.00007689	1.1150	-0.00007802
1.2850	-0.00008665	1.2700	-0.00008688
1.6650	-0.00015128	1.6550	-0.00015133
1.8750	-0.00013785	1.7100	-0.00015452
1.9350	-0.00013844	1.9100	-0.00013924
2.0000	-0.00014195	1.9850	-0.00014229
3.1600	0.00081356	2.5100	-0.00039784
4.3450	0.00080406	3.7350	-0.00158456
5.5500	0.00131669	4.9600	-0.00132934
6.9650	0.00002431	6.2950	-0.00313969
8.1350	-0.00172756	7.7000	-0.00215637
9.0500	-0.00067025	8.3350	-0.00194881
10.4500	-0.00098744	9.7850	-0.00270697
11.7300	-0.00080963	11.0450	-0.00265619
12.4200	-0.00320531	12.4100	-0.00321531
12.6600	-0.00414938	12.6200	-0.00427594
13.1700	-0.00309409	12.6750	-0.00415094
13.3850	-0.00306013	13.2600	-0.00312359
14.2600	-0.00544063	14.0700	-0.00561656
14.4650	-0.00399125	14.3850	-0.00558688
14.6350	-0.00307509	14.4800	-0.00400094
14.8950	-0.00227419	14.6700	-0.00314313
16.0000	-0.00247250	15.3900	-0.00354438

Table 3.47: Segment 1 north-west corner X direction interstory drift ratio

Time	Maximum	Time	Minimum
0.0050	-0.00000913	0.0450	-0.00000924
0.0700	-0.00000901	0.5250	-0.00002942
0.5500	-0.00002921	0.5800	-0.00002968
0.6150	-0.00002875	0.6650	-0.00003047
0.6900	-0.00003004	0.7300	-0.00003243
0.7500	-0.00003217	0.8000	-0.00003417
0.8250	-0.00003327	0.8550	-0.00003423
0.8800	-0.00003385	0.9000	-0.00003411
0.9250	-0.00003364	0.9500	-0.00003451
0.9800	-0.00003356	1.1600	-0.00005154
1.1800	-0.00005115	1.2050	-0.00005191
1.7200	0.00007578	1.7400	0.00007518
1.7700	0.00007619	1.9600	0.00004653
1.9800	0.00004674	1.9950	0.00004650
2.5200	0.00051734	3.1600	-0.00175641
3.7600	0.00283922	4.3700	-0.00182425
4.9750	0.00220616	5.5950	-0.00345613
6.3100	0.00513125	6.3450	0.00509275
6.3650	0.00513138	6.9850	-0.00092216
7.7150	0.00333100	8.1350	0.00269619
8.3100	0.00284784	9.0300	0.00029644
9.7750	0.00430459	10.4400	0.00080378
11.0500	0.00413069	11.7500	0.00052938
12.5700	0.00573875	12.5750	0.00573719
12.6150	0.00581875	13.3250	0.00355325
14.0750	0.00735156	14.3050	0.00710969

Table 3.48: Segment 2 north-west corner X direction interstory drift ratio

Time	Maximum	Time	Minimum
0.0050	0.00000504	0.0500	0.00000493
0.0750	0.00000508	0.5500	-0.00002472
0.5650	-0.00002467	0.5900	-0.00002486
0.6250	-0.00002458	0.6800	-0.00002649
0.6950	-0.00002639	0.9100	-0.00003273
0.9350	-0.00003228	0.9550	-0.00003256
0.9850	-0.00003183	1.2050	-0.00005956
1.7800	0.00013222	1.9900	0.00007754
2.5350	0.00075891	3.1550	-0.00255209
3.7650	0.00412531	4.3550	-0.00255428
4.9700	0.00343031	5.6050	-0.00479719
6.3000	0.00726156	6.9700	-0.00151272
7.6900	0.00449188	8.0600	0.00348594
8.3100	0.00374906	9.0250	0.00023881
9.7700	0.00572062	10.4350	0.00077528
11.0450	0.00558031	11.7600	0.00036475
12.5600	0.00720937	13.2900	0.00396750
14.0850	0.00849125	14.3850	0.00822531
14.4650	0.00856594	14.4800	0.00856281

Table 3.49: Segment 3 north-west corner X direction interstory drift ratio

Time	Maximum	Time	Minimum
0.0050	0.00000260	0.0600	0.00000245
0.0850	0.00000263	0.5500	-0.00003559
0.5750	-0.00003537	0.6100	-0.00003614
0.6400	-0.00003565	0.6900	-0.00003794
0.7200	-0.00003690	0.9150	-0.00004626
0.9500	-0.00004537	0.9650	-0.00004553
1.0000	-0.00004444	1.2150	-0.00008207
1.7900	0.00016841	1.9900	0.00008603
2.5550	0.00096300	3.1550	-0.00326500
3.7650	0.00505188	4.3500	-0.00346938
4.9700	0.00432156	5.6100	-0.00587906
6.2900	0.00865063	6.9650	-0.00244391
7.6600	0.00510781	8.0300	0.00369000
8.3050	0.00407063	9.0200	-0.00023984
9.7500	0.00647000	10.4300	0.00026831
11.0500	0.00632906	11.7600	-0.00027281
12.5300	0.00762281	12.6250	0.00734969
12.6400	0.00735937	13.2850	0.00368375
14.0100	0.00874594	14.0550	0.00873844
14.0850	0.00874156	14.3950	0.00830656
14.4500	0.00858344	14.4850	0.00854625

Table 3.50: Segment 4 north-west corner X direction interstory drift ratio

Time	Maximum	Time	Minimum
0.0050	-0.00010363	0.0600	-0.00010373
0.0950	-0.00010331	0.5550	-0.00014848
0.5700	-0.00014832	0.6100	-0.00014960
0.6500	-0.00014772	0.6900	-0.00015004
0.7200	-0.00014909	0.7650	-0.00015191
0.7900	-0.00015127	0.8350	-0.00015465
0.8450	-0.00015462	0.9300	-0.00016043
0.9450	-0.00016034	0.9750	-0.00016147
1.0100	-0.00015900	1.2300	-0.00020755
1.8000	0.00009497	1.9950	-0.00002322
2.5700	0.00099472	3.1500	-0.00390062
3.7650	0.00560875	4.3500	-0.00426781
4.9700	0.00489188	5.6000	-0.00676437
6.2750	0.00952437	6.9550	-0.00324531
7.6400	0.00543656	8.0300	0.00365125
8.2750	0.00413313	9.0050	-0.00073388
9.7450	0.00687531	10.4250	-0.00025878
11.0550	0.00674844	11.7650	-0.00089194
12.3750	0.00746094	12.3800	0.00745938
12.4950	0.00791781	12.6200	0.00746813
12.6400	0.00748219	13.2850	0.00330094
13.9650	0.00885000	13.9700	0.00884875
13.9750	0.00884969	14.4050	0.00818750
14.4500	0.00841562	14.4800	0.00837844
14.5800	0.00863500	14.5900	0.00863344

Table 3.51: Segment 5 north-west corner X direction interstory drift ratio

Time	Maximum	Time	Minimum
0.0350	0.00010328	0.0050	0.00010318
0.2150	0.00010855	0.0650	0.00010295
0.2800	0.00010724	0.2700	0.00010722
0.5050	0.00011468	0.3200	0.00010571
0.5750	0.00011360	0.5500	0.00011310
0.6550	0.00011309	0.6200	0.00011194
0.7300	0.00011637	0.6850	0.00011220
0.7900	0.00011600	0.7650	0.00011526
0.8500	0.00011363	0.8300	0.00011321
0.9550	0.00011436	0.9150	0.00011221
1.1000	0.00012108	0.9700	0.00011393
1.1500	0.00012365	1.1100	0.00012093
1.2000	0.00012305	1.1800	0.00012245
1.3600	0.00010748	1.3450	0.00010711
1.7400	0.00006547	1.7100	0.00006360
1.8850	0.00007322	1.7700	0.00006374
1.9350	0.00007535	1.9000	0.00007305
1.9950	0.00007062	1.9850	0.00007052
3.1750	0.00096806	2.5150	-0.00017218
4.3750	0.00118484	3.7300	-0.00111325
5.5950	0.00192922	5.0000	-0.00080584
6.3650	-0.00173234	6.3000	-0.00188641
6.9950	0.00121125	6.3750	-0.00173600
7.9650	-0.00079906	7.7400	-0.00102187
8.1850	-0.00063028	7.9850	-0.00079991
9.0200	0.00065709	8.3100	-0.00069153
10.4500	0.00027730	9.7800	-0.00151228
11.7350	0.00044844	11.0350	-0.00128100
12.3700	-0.00147122	12.3650	-0.00147716
12.4250	-0.00164616	12.4050	-0.00168100
12.6600	-0.00266944	12.6200	-0.00278641
13.2050	-0.00161334	12.6800	-0.00268131
13.3700	-0.00157256	13.2450	-0.00161588
14.3400	-0.00390906	14.0650	-0.00426156
14.4650	-0.00277516	14.3850	-0.00392969
14.6300	-0.00205362	14.4750	-0.00278144
14.8900	-0.00148394	14.6700	-0.00211147
15.7550	-0.00240616	15.4000	-0.00285144

Table 3.52: Segment 1 north-east corner X direction interstory drift ratio

Time	Maximum	Time	Minimum
0.0050	0.00000914	0.0450	0.00000904
0.0650	0.00000919	0.5250	-0.00001147
0.5500	-0.00001133	0.5800	-0.00001185
0.6150	-0.00001102	0.6650	-0.00001282
0.6900	-0.00001239	0.7300	-0.00001469
0.7500	-0.00001447	0.8000	-0.00001670
0.8250	-0.00001592	0.8550	-0.00001695
0.8750	-0.00001667	0.9000	-0.00001712
0.9250	-0.00001664	0.9500	-0.00001767
0.9800	-0.00001673	1.1600	-0.00003457
1.1800	-0.00003402	1.2000	-0.00003453
1.7150	0.00009577	1.7400	0.00009501
1.7700	0.00009603	1.9650	0.00006591
1.9700	0.00006592	2.0000	0.00006533
2.5150	0.00053919	3.1600	-0.00175669
3.7600	0.00300172	4.3650	-0.00163328
4.9700	0.00244684	5.5850	-0.00311450
6.3100	0.00589025	6.3450	0.00583734
6.3650	0.00587422	6.9750	-0.00021862
7.7050	0.00404666	8.1200	0.00336378
8.3150	0.00357581	9.0350	0.00106591
9.7800	0.00504522	10.4400	0.00157749
11.0500	0.00496356	11.7500	0.00132209
12.5600	0.00712369	13.3250	0.00454806
14.0900	0.00833687	14.2500	0.00820125

Table 3.53: Segment 2 north-east corner X direction interstory drift ratio

Time	Maximum	Time	Minimum
0.0050	-0.00000503	0.0500	-0.00000515
0.0750	-0.00000501	0.5450	-0.00003512
0.5650	-0.00003504	0.5900	-0.00003524
0.6300	-0.00003487	0.6850	-0.00003678
0.6950	-0.00003673	0.8200	-0.00004112
0.8250	-0.00004111	0.9100	-0.00004314
0.9300	-0.00004292	0.9600	-0.00004350
0.9850	-0.00004294	1.2050	-0.00007028
1.7800	0.00012273	1.9950	0.00006697
2.5250	0.00074725	3.1600	-0.00256403
3.7650	0.00418937	4.3600	-0.00251984
4.9700	0.00349531	5.6000	-0.00466250
6.3000	0.00748719	6.9700	-0.00131094
7.6900	0.00470938	8.0550	0.00369719
8.3100	0.00397625	9.0300	0.00045172
9.7700	0.00593313	10.4350	0.00097650
11.0450	0.00579313	11.7600	0.00055981
12.5600	0.00732438	13.2900	0.00413844
14.0850	0.00865094	14.3850	0.00835969
14.4650	0.00879438	14.4750	0.00879313

Table 3.54: Segment 3 north-east corner X direction interstory drift ratio

Time	Maximum	Time	Minimum
0.0050	-0.00000258	0.0600	-0.00000273
0.0850	-0.00000260	0.5500	-0.00004131
0.5750	-0.00004108	0.6100	-0.00004183
0.6450	-0.00004124	0.6900	-0.00004363
0.7150	-0.00004280	0.9200	-0.00005248
0.9450	-0.00005202	0.9700	-0.00005244
1.0000	-0.00005145	1.2150	-0.00008831
1.7950	0.00016473	1.9950	0.00008027
2.5450	0.00094881	3.1550	-0.00328063
3.7650	0.00504813	4.3500	-0.00349094
4.9700	0.00431937	5.6000	-0.00585844
6.2850	0.00877250	6.9600	-0.00234287
7.6600	0.00520750	8.0300	0.00375812
8.3150	0.00418750	9.0200	-0.00011903
9.7550	0.00657000	10.4300	0.00037819
11.0500	0.00645719	11.7600	-0.00017403
12.5300	0.00773875	12.6250	0.00746062
12.6400	0.00746938	13.2850	0.00380750
14.0150	0.00884563	14.0500	0.00884062
14.0850	0.00884531	14.3950	0.00844062
14.4500	0.00870031	14.4850	0.00866531

Table 3.55: Segment 4 north-east corner X direction interstory drift ratio

Time	Maximum	Time	Minimum
0.0050	0.00010365	0.0700	0.00010339
0.0850	0.00010345	0.4150	0.00006774
0.4200	0.00006776	0.6250	0.00005721
0.6450	0.00005747	0.6850	0.00005593
0.7250	0.00005952	0.9150	0.00004357
1.0050	0.00004907	1.2300	0.00000177
1.7950	0.00030250	1.9950	0.00019085
2.5700	0.00123500	3.1450	-0.00372281
3.7650	0.00586187	4.3400	-0.00408625
4.9650	0.00512313	5.6000	-0.00657469
6.2750	0.00967594	6.9500	-0.00307219
7.6250	0.00563281	8.0300	0.00371406
8.2850	0.00431344	8.3400	0.00430969
8.3550	0.00431000	9.0100	-0.00049497
9.7400	0.00702094	10.4200	-0.00007681
11.0550	0.00695875	11.7650	-0.00071619
12.3700	0.00761375	12.3800	0.00759500
12.5000	0.00807188	12.6250	0.00764063
12.6450	0.00765063	13.2850	0.00352812
13.9650	0.00898188	13.9700	0.00898125
13.9750	0.00898219	14.4050	0.00837125
14.4500	0.00860969	14.4800	0.00858031
14.5750	0.00883094	14.5850	0.00881906

Table 3.56: Segment 5 north-east corner X direction interstory drift ratio

Time	Maximum	Time	Minimum
0.0050	-0.00010284	0.0200	-0.00010285
0.0350	-0.00010278	0.0750	-0.00010343
0.1100	-0.00010258	0.2300	-0.00010519
0.3450	-0.00010291	0.5100	-0.00010890
0.5350	-0.00010878	0.5600	-0.00010895
0.6500	-0.00010766	0.7600	-0.00011191
0.8150	-0.00010888	0.8300	-0.00010895
0.8550	-0.00010813	1.0150	-0.00012347
1.1300	-0.00011870	1.1500	-0.00011885
1.3650	-0.00009493	1.4050	-0.00009781
1.5750	-0.00006882	1.7350	-0.00009327
1.8500	-0.00008263	1.9950	-0.00010230
2.1850	-0.00004092	2.3200	-0.00012691
2.4500	-0.00001695	2.6150	-0.00024782
2.7550	-0.00016114	2.9200	-0.00032250
3.0850	-0.00011126	3.1650	-0.00014555
3.3800	0.00015138	3.4950	0.00011173
3.5800	0.00013456	4.0700	-0.00076172
4.5550	0.00001131	4.6500	-0.00001081
4.7750	0.00004880	5.2250	-0.00075338
5.8850	0.00057547	6.3150	-0.00105184
6.3800	-0.00014146	6.4400	-0.00039384
6.4450	-0.00039319	6.6550	-0.00070675
7.2800	0.00101859	7.9250	-0.00090644
8.6750	0.00068559	8.7350	0.00068206
8.8450	0.00070128	9.5950	-0.00048172
10.0950	0.00075000	10.2500	0.00067272
10.3700	0.00071166	10.4800	0.00068328
10.9700	0.00111075	11.6850	0.00062422
12.5800	0.00297291	12.6100	0.00292197
12.6550	0.00299300	12.6900	0.00296803
12.7200	0.00297672	12.7600	0.00296175
12.8750	0.00298941	13.1250	0.00267766
13.4900	0.00281141	13.5650	0.00280338
13.5850	0.00280372	13.7550	0.00267475
13.7800	0.00268956	13.8250	0.00257572
14.3800	0.00507000	14.3950	0.00500969
14.6350	0.00643062	14.6450	0.00642781

Table 3.57: Segment 1 south-west corner Y direction interstory drift ratio

Time	Maximum	Time	Minimum
0.0050	-0.00000978	0.0200	-0.00000979
0.0250	-0.00000978	0.0400	-0.00000983
0.0900	-0.00000882	0.1100	-0.00000888
0.1500	-0.00000818	0.1600	-0.00000820
0.5900	0.00000433	0.6000	0.00000432
0.6050	0.00000433	0.6150	0.00000431
0.7750	0.00000869	0.8100	0.00000815
0.8400	0.00000845	0.8600	0.00000821
1.0950	0.00003411	1.6200	-0.00007811
1.9900	-0.00002808	2.2200	-0.00016706
2.3500	-0.00006069	2.4650	-0.00020307
2.9450	0.00050040	3.0850	0.00040412
3.1250	0.00040924	3.6400	-0.00098692
4.1300	0.00076503	4.8150	-0.00105788
5.2900	0.00074956	5.9700	-0.00212197
6.6750	0.00183541	7.2700	-0.00123231
7.9350	0.00245578	8.6900	-0.00052566
9.7200	0.00202781	10.7350	0.00084058
11.6500	0.00136841	12.1450	0.00093282
12.3550	0.00112575	12.3850	0.00085516
12.6700	0.00157491	13.3300	0.00083116
13.7850	0.00236926	13.7900	0.00236397
13.9850	0.00293641	14.7600	-0.00032812
15.7550	0.00390094	15.8000	0.00389250

Table 3.58: Segment 2 south-west corner Y direction interstory drift ratio

Time	Maximum	Time	Minimum
0.0050	0.00000414	0.0450	0.00000410
0.6050	0.00002462	0.6500	0.00002434
0.7900	0.00002989	0.8350	0.00002942
1.1050	0.00006967	1.6450	-0.00009622
1.9700	-0.00002509	2.2350	-0.00022397
2.3600	-0.00007064	2.4700	-0.00022514
2.9800	0.00067637	3.6500	-0.00123309
4.1400	0.00124328	4.8150	-0.00135778
5.3000	0.00125441	5.9700	-0.00284991
6.6650	0.00272053	7.2650	-0.00176881
7.9450	0.00355844	8.6950	-0.00075137
9.7000	0.00257816	10.8300	0.00085643
11.6400	0.00171925	12.1750	0.00103163
12.3700	0.00129574	12.3800	0.00128409
12.6600	0.00199669	13.3200	0.00084459
13.9700	0.00353053	14.7250	-0.00001219
15.7000	0.00415437	15.8300	0.00411313
15.8450	0.00411563	15.8500	0.00411531

Table 3.59: Segment 3 south-west corner Y direction interstory drift ratio

Time	Maximum	Time	Minimum
0.0050	0.00000174	0.0500	0.00000171
0.1200	0.00000377	0.1350	0.00000369
0.6100	0.00002832	0.6550	0.00002793
0.8050	0.00003457	0.8350	0.00003403
1.1150	0.00008913	1.6600	-0.00013262
1.9050	-0.00003358	2.2450	-0.00030159
2.3700	-0.00010454	2.4850	-0.00025056
2.7750	0.00062487	2.8400	0.00058278
3.0350	0.00090891	3.6200	-0.00146162
4.1500	0.00174353	4.8250	-0.00160606
5.3150	0.00178869	5.9300	-0.00338750
6.6600	0.00326531	7.2700	-0.00221750
7.9550	0.00415563	8.6750	-0.00106428
9.5250	0.00281906	9.6500	0.00274094
9.6950	0.00276750	10.2050	0.00150584
10.3550	0.00156859	10.8650	0.00077419
11.6500	0.00203766	12.2250	0.00102744
12.5900	0.00206881	12.6000	0.00206825
12.6650	0.00211900	12.6850	0.00211663
12.7100	0.00211928	13.3150	0.00084196
13.9800	0.00372875	14.7250	-0.00024969
15.6950	0.00444437	15.9000	0.00434469

Table 3.60: Segment 4 south-west corner Y direction interstory drift ratio

Time	Maximum	Time	Minimum
0.1150	-0.00010209	0.0050	-0.00010462
0.6500	-0.00007286	0.1500	-0.00010274
1.1200	0.00000109	0.6850	-0.00007318
1.8900	-0.00013072	1.6750	-0.00027213
2.4050	-0.00021678	2.2600	-0.00048209
2.7700	0.00073866	2.5300	-0.00038183
3.0550	0.00109113	2.8800	0.00051456
4.1650	0.00198625	3.6000	-0.00178219
5.3300	0.00207500	4.8400	-0.00195344
6.6300	0.00369625	5.9200	-0.00394250
7.9700	0.00460500	7.2700	-0.00276344
9.5050	0.00307750	8.6900	-0.00139281
9.6900	0.00285469	9.6600	0.00283313
10.3700	0.00165813	10.2100	0.00147219
11.6450	0.00216063	10.8450	0.00060962
12.5900	0.00210178	12.2450	0.00091303
12.6650	0.00216216	12.6050	0.00209597
12.7150	0.00217116	12.6800	0.00216059
13.9950	0.00388094	13.3250	0.00072804
14.6050	-0.00017906	14.5950	-0.00018187
15.6850	0.00462162	14.7300	-0.00043969
16.0000	0.00449594	15.9100	0.00446313

Table 3.61: Segment 5 south-west corner Y direction interstory drift ratio

Time	Maximum	Time	Minimum
0.0350	-0.00010279	0.0050	-0.00010285
0.1100	-0.00010271	0.0750	-0.00010344
0.2850	-0.00010503	0.2350	-0.00010635
0.3300	-0.00010508	0.3100	-0.00010521
0.5300	-0.00011223	0.5150	-0.00011227
0.6500	-0.00011125	0.5600	-0.00011245
0.8150	-0.00011303	0.7650	-0.00011580
0.8550	-0.00011244	0.8300	-0.00011313
1.0650	-0.00012706	1.0200	-0.00012810
1.1250	-0.00012519	1.0800	-0.00012714
1.3800	-0.00009624	1.1600	-0.00012595
1.5800	-0.00005899	1.4000	-0.00009683
1.8400	-0.00006926	1.7350	-0.00007865
2.2000	-0.00000519	1.9950	-0.00009426
2.4550	0.00006178	2.3150	-0.00006443
2.7100	-0.00016095	2.6300	-0.00017541
3.0650	-0.00039744	2.9400	-0.00049281
3.6300	0.00048653	3.1600	-0.00045416
4.8150	0.00039025	4.1850	-0.00066688
5.3650	-0.00068856	5.3450	-0.00069388
5.4450	-0.00070350	5.4400	-0.00070359
5.9750	0.00064819	5.4950	-0.00073050
7.3550	0.00036406	6.7000	-0.00133409
8.6250	0.00010740	7.9350	-0.00140097
9.6450	-0.00098138	9.6000	-0.00100122
9.8200	-0.00090644	9.6850	-0.00104244
10.1050	-0.00082806	9.9200	-0.00092284
10.4000	-0.00076294	10.2150	-0.00084784
10.9950	-0.00040387	10.4750	-0.00076991
12.4000	-0.00034594	11.6650	-0.00098384
12.4650	-0.00038819	12.4300	-0.00044800
12.6000	-0.00043038	12.5700	-0.00046263
12.6650	-0.00051609	12.6500	-0.00051756
13.2200	-0.00021520	12.7800	-0.00059888
13.8550	-0.00089503	13.8300	-0.00091212
14.3950	-0.00004328	13.8950	-0.00092228
14.6800	0.00040128	14.4300	-0.00005320
16.0000	-0.00055053	15.6500	-0.00097206

Table 3.62: Segment 1 south-east corner Y direction interstory drift ratio

Time	Maximum	Time	Minimum
0.0050	-0.00000978	0.0400	-0.00000983
0.0900	-0.00000884	0.1050	-0.00000893
0.1500	-0.00000836	0.1650	-0.00000840
0.6150	0.00000354	0.6500	0.00000350
0.7750	0.00000765	0.8100	0.00000707
0.8350	0.00000742	0.8550	0.00000714
1.0950	0.00003240	1.6150	-0.00007511
1.9900	-0.00002528	2.2150	-0.00015577
2.3500	-0.00004627	2.4600	-0.00018142
2.9400	0.00045203	3.0900	0.00033616
3.1200	0.00033844	3.6200	-0.00078806
4.1200	0.00089803	4.8050	-0.00093231
5.2750	0.00079466	5.9600	-0.00205863
6.6600	0.00189216	7.2450	-0.00140009
7.9450	0.00234672	8.6600	-0.00067147
9.6300	0.00173981	9.6650	0.00172013
9.6800	0.00172794	10.6900	0.00051884
10.8400	0.00054791	10.8550	0.00054784
10.8750	0.00054803	10.9150	0.00054600
11.6100	0.00103981	12.1000	0.00060072
12.3600	0.00076025	12.3950	0.00065178
12.4350	0.00074269	12.4650	0.00072694
12.5850	0.00087828	12.5950	0.00087744
12.7650	0.00104669	13.2550	0.00009043
13.9100	0.00191794	14.6950	-0.00098213
15.5900	0.00151078	16.0000	0.00071525

Table 3.63: Segment 2 south-east corner Y direction interstory drift ratio

Time	Maximum	Time	Minimum
0.0200	0.00000415	0.0050	0.00000414
0.6050	0.00002432	0.0450	0.00000410
0.7900	0.00002935	0.6550	0.00002399
1.1050	0.00006871	0.8300	0.00002894
1.9700	-0.00002345	1.6400	-0.00009459
2.3600	-0.00006555	2.2350	-0.00021815
2.9800	0.00065047	2.4700	-0.00021354
4.1350	0.00131334	3.6250	-0.00115384
5.3000	0.00132197	4.8150	-0.00124656
6.6750	0.00270562	5.9550	-0.00283238
7.9500	0.00341594	7.2550	-0.00177956
9.6200	0.00243234	8.6600	-0.00082066
11.6250	0.00161003	10.8750	0.00077016
12.3650	0.00106481	12.1650	0.00092016
12.7550	0.00162847	12.3800	0.00104025
13.9500	0.00279253	13.2650	0.00039041
15.5850	0.00233116	14.7000	-0.00095784

Table 3.64: Segment 3 south-east corner Y direction interstory drift ratio

Time	Maximum	Time	Minimum
0.0050	0.00000174	0.0500	0.00000170
0.1150	0.00000370	0.1400	0.00000354
0.6100	0.00002764	0.6650	0.00002721
0.8050	0.00003350	0.8350	0.00003300
1.1150	0.00008726	1.6600	-0.00012907
1.9150	-0.00003131	2.2450	-0.00028900
2.3750	-0.00009256	2.4850	-0.00022638
2.7750	0.00062369	2.8500	0.00056600
3.0350	0.00085200	3.6150	-0.00142200
4.1450	0.00167753	4.8250	-0.00155247
5.3100	0.00174047	5.9250	-0.00341625
6.6500	0.00331563	7.2600	-0.00227031
7.9600	0.00421781	8.6700	-0.00108219
9.5500	0.00293844	10.8550	0.00079844
11.6200	0.00192969	12.1950	0.00101806
12.4050	0.00134137	12.4250	0.00132294
12.7500	0.00195031	13.2750	0.00044763
13.9550	0.00328562	14.7000	-0.00106956
15.5700	0.00274281	16.0000	0.00158175

Table 3.65: Segment 4 south-east corner Y direction interstory drift ratio

Time	Maximum	Time	Minimum
0.0400	-0.00010461	0.0050	-0.00010462
0.1150	-0.00010204	0.0500	-0.00010462
0.6550	-0.00007456	0.1500	-0.00010266
1.1200	-0.00000078	0.6850	-0.00007468
1.4400	-0.00015970	1.4200	-0.00016007
1.8850	-0.00012464	1.6750	-0.00026767
2.4000	-0.00018528	2.2600	-0.00045997
2.7650	0.00071956	2.5250	-0.00034978
3.0500	0.00096803	2.8800	0.00046528
4.1550	0.00186938	3.5900	-0.00166531
5.3150	0.00198062	4.8350	-0.00186219
6.6250	0.00372375	5.9050	-0.00386031
7.9700	0.00459219	7.2600	-0.00284625
9.5200	0.00313563	8.6750	-0.00146166
10.3450	0.00137437	10.2400	0.00133281
11.6100	0.00195813	10.8350	0.00062403
12.4000	0.00133344	12.2050	0.00089312
12.7550	0.00199406	12.4250	0.00130437
13.8000	0.00315781	13.2850	0.00025322
13.9850	0.00341000	13.8100	0.00315688
15.5600	0.00284906	14.7100	-0.00134312

Table 3.66: Segment 5 south-east corner Y direction interstory drift ratio

Time	Maximum	Time	Minimum
0.0350	0.00010261	0.0050	0.00010255
0.1050	0.00010186	0.0800	0.00010163
0.2000	0.00010228	0.1400	0.00010131
0.4650	0.00009667	0.3850	0.00009518
0.5950	0.00009448	0.5700	0.00009436
0.7300	0.00009345	0.6950	0.00009263
0.7900	0.00009129	0.7800	0.00009127
0.8550	0.00008975	0.8400	0.00008963
1.0450	0.00007972	1.0350	0.00007970
1.5900	0.00014260	1.0900	0.00007905
1.7650	0.00012918	1.7350	0.00012847
1.8550	0.00013493	1.7750	0.00012913
2.2100	0.00020257	2.0000	0.00011339
2.4550	0.00026117	2.3200	0.00014796
2.7150	0.00004716	2.6250	0.00002406
3.0650	-0.00017145	2.9350	-0.00028515
3.6350	0.00071456	3.1650	-0.00023471
4.8150	0.00082588	4.1950	-0.00029029
5.3650	-0.00024685	5.3450	-0.00025013
5.9800	0.00132444	5.4350	-0.00026791
6.0700	0.00131316	6.0450	0.00129763
6.2500	0.00140322	6.0900	0.00130806
6.3750	0.00187828	6.3150	0.00134475
7.4150	0.00244916	6.7050	0.00076381
8.6150	0.00223013	7.9300	0.00083484
9.8250	0.00222850	9.3500	0.00117175
9.8600	0.00222887	9.8400	0.00222816
10.0250	0.00221709	9.9600	0.00220997
11.0200	0.00274028	10.4650	0.00183591
12.5800	0.00455438	11.7200	0.00176369
12.6500	0.00457094	12.6100	0.00452750
13.6800	0.00430344	13.1400	0.00396562
13.7850	0.00430594	13.7500	0.00427844
14.3750	0.00664094	13.8150	0.00429094
16.0000	0.02503938	14.3900	0.00658781

Table 3.67: Segment 1 north-west corner Y direction interstory drift ratio

Time	Maximum	Time	Minimum
0.0050	0.00000885	0.0450	0.00000879
0.0900	0.00000973	0.1050	0.00000963
0.5800	0.00002221	0.6500	0.00002206
0.7750	0.00002635	0.8100	0.00002556
0.8350	0.00002578	0.8600	0.00002546
1.0900	0.00005104	1.6150	-0.00005649
1.9900	-0.00000638	2.2150	-0.00013643
2.3500	-0.00002688	2.4600	-0.00016265
2.9400	0.00047023	3.0950	0.00035225
3.1200	0.00035411	3.6250	-0.00078044
4.1200	0.00101642	4.8050	-0.00073313
5.2750	0.00098837	5.9550	-0.00175863
6.6550	0.00288944	7.2600	-0.00058141
7.9350	0.00359475	8.8100	0.00029903
9.7000	0.00301025	10.7000	0.00155116
11.6200	0.00207687	12.1050	0.00167966
12.3600	0.00197641	12.3850	0.00182484
12.6250	0.00244881	12.6550	0.00243947
12.6800	0.00244184	13.3500	0.00153544
13.9700	0.00401906	14.5650	0.00107406
14.5850	0.00114781	14.7750	0.00082531
15.6900	0.00456094	15.7350	0.00455375
15.7500	0.00455500	15.7900	0.00454594

Table 3.68: Segment 2 north-west corner Y direction interstory drift ratio

Time	Maximum	Time	Minimum
0.0200	-0.00000530	0.0050	-0.00000531
0.6100	0.00001481	0.0450	-0.00000535
0.7950	0.00001992	0.6550	0.00001462
1.1050	0.00005927	0.8300	0.00001963
1.9750	-0.00003304	1.6400	-0.00010414
2.3600	-0.00007500	2.2350	-0.00022794
2.9800	0.00064075	2.4700	-0.00022284
4.1350	0.00132747	3.6350	-0.00117353
5.3000	0.00133988	4.8150	-0.00122847
6.6650	0.00296069	5.9600	-0.00271309
7.9450	0.00377403	7.2650	-0.00140028
9.7050	0.00283566	8.6900	-0.00043278
11.6400	0.00202837	10.8300	0.00119276
12.6600	0.00231325	12.1800	0.00136456
13.9750	0.00378803	13.3200	0.00119781
15.7050	0.00446188	14.7300	0.00018844
16.0000	0.00450156	15.8250	0.00443219

Table 3.69: Segment 3 north-west corner Y direction interstory drift ratio

Time	Maximum	Time	Minimum
0.0050	-0.00000364	0.0500	-0.00000368
0.1150	-0.00000164	0.1400	-0.00000182
0.6150	0.00002225	0.6650	0.00002189
0.8050	0.00002819	0.8300	0.00002772
1.1150	0.00008193	1.6600	-0.00013454
1.9150	-0.00003683	2.2450	-0.00029491
2.3750	-0.00009827	2.4850	-0.00023225
2.7750	0.00061866	2.8500	0.00056150
3.0400	0.00085187	3.6150	-0.00139875
4.1450	0.00168581	4.8250	-0.00155881
5.3100	0.00173734	5.9200	-0.00336656
6.6500	0.00338719	7.2650	-0.00212437
7.9550	0.00433125	8.6900	-0.00094697
9.5350	0.00301031	9.6550	0.00294219
9.6950	0.00296531	10.2200	0.00160469
10.3550	0.00164762	10.8400	0.00093882
11.6400	0.00210563	12.2050	0.00119025
12.5850	0.00222527	12.6000	0.00222258
12.6600	0.00227662	12.6900	0.00227210
12.7050	0.00227287	13.3200	0.00093319
13.9750	0.00387691	14.7250	-0.00010250
15.6950	0.00454406	15.9000	0.00443906

Table 3.70: Segment 4 north-west corner Y direction interstory drift ratio

Time	Maximum	Time	Minimum
0.0050	0.00010089	0.0650	0.00010079
0.2700	0.00010855	0.2850	0.00010850
0.6050	0.00013115	0.6600	0.00012993
0.7500	0.00013499	0.7550	0.00013497
0.8000	0.00013636	0.8350	0.00013557
1.1200	0.00020501	1.4150	0.00004400
1.4350	0.00004494	1.6750	-0.00006175
1.8850	0.00008208	2.2600	-0.00024697
2.4000	0.00001500	2.5250	-0.00014466
2.7650	0.00092956	2.8800	0.00066941
3.0500	0.00118669	3.5800	-0.00146063
3.5850	-0.00146062	3.5900	-0.00146063
4.1550	0.00211969	4.8350	-0.00163750
5.3200	0.00221063	5.9000	-0.00369500
6.6250	0.00380750	7.2700	-0.00258000
7.9650	0.00479687	8.7050	-0.00121781
9.5150	0.00331500	9.6600	0.00313625
9.6900	0.00316000	10.2150	0.00160969
10.3650	0.00174000	10.8350	0.00087513
11.6450	0.00224844	12.2100	0.00116800
12.5900	0.00236559	12.6100	0.00235500
12.6600	0.00239991	12.6950	0.00238631
12.7100	0.00238663	13.3200	0.00086253
13.7950	0.00367906	13.8050	0.00367625
13.9900	0.00412313	14.7250	-0.00030125
15.6600	0.00469638	15.9250	0.00449937

Table 3.71: Segment 5 north-west corner Y direction interstory drift ratio

Time	Maximum	Time	Minimum
0.0350	0.00010260	0.0050	0.00010254
0.1050	0.00010194	0.0800	0.00010163
0.2050	0.00010316	0.1350	0.00010160
0.4700	0.00009968	0.3800	0.00009762
0.5950	0.00009793	0.5700	0.00009778
0.7300	0.00009714	0.6950	0.00009620
0.7950	0.00009523	0.7750	0.00009512
0.8550	0.00009394	0.8400	0.00009374
1.0650	0.00008484	1.0250	0.00008433
1.3750	0.00010672	1.0850	0.00008469
1.5850	0.00013266	1.4000	0.00010550
1.7600	0.00011457	1.7400	0.00011420
1.8750	0.00012294	1.7750	0.00011440
2.1850	0.00016650	2.0000	0.00010557
2.4550	0.00018434	2.3250	0.00008697
2.7550	0.00004890	2.6150	-0.00004656
3.0850	0.00011376	2.9200	-0.00012023
3.3800	0.00037831	3.1700	0.00007184
3.5850	0.00037922	3.5000	0.00033903
4.5450	0.00049456	4.0600	-0.00034969
4.7800	0.00054953	4.6500	0.00046322
5.9200	0.00122341	5.2250	-0.00028123
7.1950	0.00141872	6.6250	-0.00051722
8.6500	0.00101672	7.9300	-0.00059253
8.8650	0.00101013	8.7600	0.00098484
9.6500	-0.00035525	9.6250	-0.00036359
10.4200	0.00038694	9.6850	-0.00040497
10.6200	0.00038419	10.5150	0.00036578
10.9450	0.00025475	10.8800	0.00024712
11.1800	0.00023665	11.1250	0.00023541
11.4900	0.00015594	11.4600	0.00015530
12.0050	0.00034803	11.5400	0.00015392
12.4000	0.00026897	12.3450	0.00013863
12.5500	0.00030983	12.4300	0.00018092
12.6050	0.00038063	12.5600	0.00030922
13.2450	0.00085216	12.7700	0.00020893
13.8650	-0.00015428	13.8250	-0.00018425
14.6200	0.00136816	13.8850	-0.00015888
14.6800	0.00137391	14.6350	0.00136672
16.0000	0.00044462	15.6500	0.00009843

Table 3.72: Segment 1 north-east corner Y direction interstory drift ratio

Time	Maximum	Time	Minimum
0.0050	0.00000885	0.0450	0.00000880
0.0900	0.00000976	0.1050	0.00000970
0.5800	0.00002311	0.6350	0.00002298
0.7750	0.00002744	0.8150	0.00002670
0.8350	0.00002687	0.8600	0.00002659
1.0950	0.00005283	1.6200	-0.00005958
1.9900	-0.00000925	2.2200	-0.00014825
2.3450	-0.00004216	2.4650	-0.00018528
2.9450	0.00052038	3.0350	0.00046067
3.0500	0.00046135	3.0650	0.00046079
3.1200	0.00047407	3.6300	-0.00082719
4.1350	0.00096149	4.1500	0.00095936
4.1800	0.00097467	4.8100	-0.00082578
5.2900	0.00098454	5.9700	-0.00173666
6.6800	0.00216903	7.2550	-0.00101300
7.9400	0.00259269	8.6500	-0.00037303
9.6250	0.00193800	9.6500	0.00193309
9.6850	0.00195344	10.7350	0.00084241
10.7600	0.00084279	10.9400	0.00080394
11.6300	0.00141777	12.1500	0.00091516
12.3550	0.00099415	12.3950	0.00086918
12.4350	0.00096699	12.4650	0.00094947
12.7700	0.00133828	13.2500	0.00045409
13.9250	0.00219126	14.6950	-0.00062825
15.6150	0.00197799	16.0000	0.00121587

Table 3.73: Segment 2 north-east corner Y direction interstory drift ratio

Time	Maximum	Time	Minimum
0.0050	-0.00000530	0.0450	-0.00000534
0.6100	0.00001512	0.6550	0.00001496
0.7950	0.00002047	0.8350	0.00002011
1.1050	0.00006023	1.6400	-0.00010573
1.9700	-0.00003465	2.2350	-0.00023374
2.3600	-0.00008017	2.4700	-0.00023434
2.9800	0.00066647	3.6300	-0.00120403
4.1400	0.00130412	4.8150	-0.00126506
5.3000	0.00134916	5.9550	-0.00268456
6.6800	0.00295191	7.2550	-0.00147644
7.9500	0.00372500	8.6550	-0.00051650
9.6150	0.00272941	10.9000	0.00104731
11.6250	0.00192916	12.1700	0.00120688
12.3700	0.00134447	12.3850	0.00132794
12.7550	0.00192513	13.2650	0.00069055
13.9500	0.00309197	14.7000	-0.00066459
15.5800	0.00260584	16.0000	0.00158147

Table 3.74: Segment 3 north-east corner Y direction interstory drift ratio

Time	Maximum	Time	Minimum
0.0200	-0.00000363	0.0050	-0.00000364
0.1200	-0.00000157	0.0550	-0.00000368
0.6100	0.00002288	0.1350	-0.00000166
0.8050	0.00002921	0.6550	0.00002257
1.1150	0.00008373	0.8350	0.00002870
1.9050	-0.00003895	1.6600	-0.00013792
2.3700	-0.00010951	2.2450	-0.00030688
2.7750	0.00061922	2.4850	-0.00025541
3.0350	0.00089906	2.8400	0.00057697
4.1500	0.00171766	3.6200	-0.00149447
5.3150	0.00177244	4.8250	-0.00162091
6.6650	0.00339000	5.9300	-0.00340625
7.9600	0.00430187	7.2600	-0.00214406
9.5500	0.00299750	8.6550	-0.00097816
11.6350	0.00208906	10.8800	0.00086109
12.4050	0.00139722	12.2150	0.00109306
12.7550	0.00203647	12.4250	0.00137678
13.9600	0.00337094	13.2750	0.00057300
15.5750	0.00286563	14.7050	-0.00096213

Table 3.75: Segment 4 north-east corner Y direction interstory drift ratio

Time	Maximum	Time	Minimum
0.0050	0.00010089	0.0600	0.00010079
0.6050	0.00013277	0.6650	0.00013145
0.7450	0.00013612	0.7550	0.00013610
0.8000	0.00013763	0.8300	0.00013709
1.1250	0.00020671	1.4200	0.00004270
1.4300	0.00004286	1.6750	-0.00006581
1.8900	0.00007655	2.2600	-0.00026734
2.4000	-0.00001472	2.5300	-0.00017344
2.7700	0.00094772	2.8800	0.00071525
3.0550	0.00129431	3.6050	-0.00162156
4.1600	0.00217812	4.8450	-0.00175969
5.3300	0.00226563	5.9150	-0.00372531
6.6300	0.00395031	7.2700	-0.00263531
7.9750	0.00477469	8.6850	-0.00125178
9.5100	0.00326906	9.7050	0.00289406
9.7100	0.00289438	10.2250	0.00157500
10.3550	0.00167500	10.8600	0.00073809
11.6350	0.00225031	12.2350	0.00101034
12.4000	0.00138844	12.4250	0.00136750
12.7500	0.00212375	13.2900	0.00054372
13.8000	0.00326156	13.8100	0.00326031
13.9950	0.00359281	14.7050	-0.00112094
15.5700	0.00304500	16.0000	0.00173344

Table 3.76: Segment 5 north-east corner Y direction interstory drift ratio

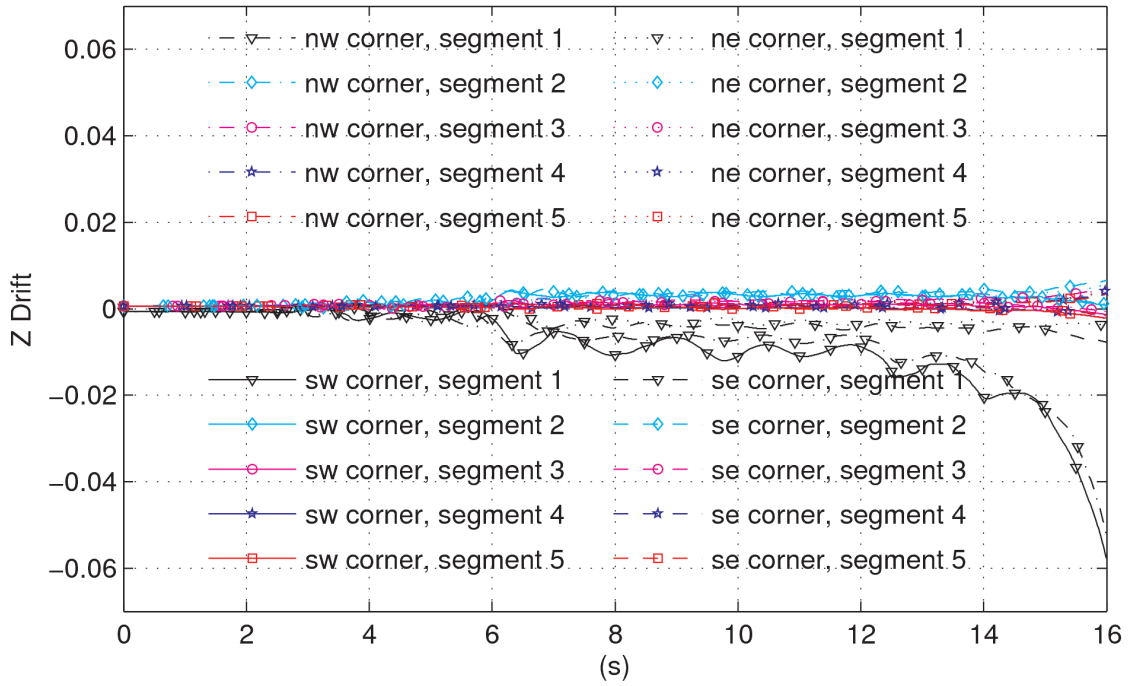


Figure 3.15: Time histories of Z direction drifts in the five segments of the water-tank under the Takatori ground excitation scaled down by a factor of 0.32.

Time	Maximum	Time	Minimum
0.1100	-0.00067013	0.0050	-0.00067272
0.3550	-0.00065572	0.2100	-0.00068000
0.6600	-0.00066666	0.5000	-0.00067869
0.8650	-0.00065853	0.7400	-0.00067841
1.1150	-0.00067763	1.0050	-0.00068650
1.3250	-0.00063778	1.1950	-0.00068269
1.5650	-0.00065903	1.4450	-0.00066734
1.8050	-0.00068937	1.7500	-0.00069184
2.0800	-0.00066403	1.9300	-0.00070091
2.4300	-0.00079400	2.3450	-0.00081753
3.2200	-0.00004598	2.5700	-0.00087119
4.3700	-0.00095303	3.8150	-0.00264878
5.5950	-0.00053478	5.0650	-0.00263791
5.7600	-0.00052897	5.6700	-0.00056444
7.0600	-0.00525406	6.4400	-0.01038000
8.9750	-0.00669969	7.9100	-0.01075375
10.4500	-0.00835031	9.7800	-0.01199594
11.8300	-0.00835094	11.0750	-0.01110469
13.2000	-0.01276500	12.6250	-0.01584969
14.3850	-0.01959375	14.0600	-0.02083812
14.5700	-0.01945313	14.4300	-0.01962906

Table 3.77: Segment 1 south-west corner Z direction interstory drift ratio

Time	Maximum	Time	Minimum
0.0250	0.00067322	0.0050	0.00067319
0.2150	0.00068122	0.1150	0.00067050
0.5000	0.00068016	0.3500	0.00065675
0.7400	0.00067997	0.6600	0.00066788
1.0050	0.00068588	0.8700	0.00065972
1.2000	0.00068422	1.1150	0.00067819
1.4450	0.00066866	1.3250	0.00064047
1.5050	0.00066778	1.4800	0.00066700
1.7500	0.00068772	1.5650	0.00066053
1.9300	0.00069850	1.7900	0.00068559
2.3400	0.00078428	2.0750	0.00066016
2.5650	0.00081194	2.4350	0.00076728
2.6850	0.00082344	2.6100	0.00080538
3.6800	0.00132644	3.2200	0.00019290
3.8350	0.00195716	3.6850	0.00132634
5.0700	0.00200056	4.3600	0.00066981
5.6750	0.00055166	5.5750	0.00048378
6.3250	0.00435875	5.7800	0.00046959
6.4200	0.00377563	6.3850	0.00375531
7.8700	0.00382281	7.0350	0.00262469
8.1400	0.00358656	8.1300	0.00358625
8.9100	0.00286219	8.8900	0.00286187
8.9200	0.00286219	8.9150	0.00286187
9.5900	0.00377406	8.9800	0.00285687
11.0700	0.00348469	10.4400	0.00286063
12.3800	0.00360000	11.8350	0.00286344
13.2400	0.00276531	13.1250	0.00275438
13.7000	0.00326375	13.3650	0.00275656
14.2750	0.00254438	14.2650	0.00254406
14.5550	0.00266375	14.2800	0.00254437
14.5850	0.00267094	14.5650	0.00266313
14.8600	0.00283313	14.6350	0.00265969

Table 3.78: Segment 2 south-west corner Z direction interstory drift ratio

Time	Maximum	Time	Minimum
0.0050	0.00064497	0.0250	0.00064494
0.0300	0.00064497	0.1150	0.00064225
0.2150	0.00065328	0.3500	0.00062972
0.4950	0.00065253	0.5750	0.00064762
0.5800	0.00064763	0.6600	0.00064053
0.7400	0.00065244	0.8700	0.00063284
1.0050	0.00065562	1.1150	0.00064981
1.2050	0.00065663	1.3250	0.00061647
1.4450	0.00064106	1.4750	0.00063944
1.5050	0.00064112	1.5650	0.00063400
1.6300	0.00064578	1.6750	0.00064353
1.7500	0.00065375	1.7850	0.00065178
1.9250	0.00066600	2.0700	0.00062763
2.3350	0.00071444	2.4350	0.00070759
2.4800	0.00071213	2.5200	0.00070941
2.5550	0.00071306	2.6000	0.00070744
2.7050	0.00076203	2.9300	0.00050947
3.0000	0.00052319	3.2150	0.00032189
3.6750	0.00103688	3.6900	0.00103375
3.7550	0.00105875	3.7850	0.00105313
3.8300	0.00106156	4.3450	0.00023866
5.0600	0.00112844	5.5300	0.00022447
5.6750	0.00036944	5.8000	0.00022253
6.0500	0.00134188	6.0800	0.00132500
6.2750	0.00192000	6.3850	0.00130125
6.4200	0.00131719	6.7100	0.00096594
6.7650	0.00097344	6.9950	0.00077719
7.5700	0.00137375	7.6900	0.00135312
7.8000	0.00138937	8.0900	0.00119937
8.1750	0.00122719	8.4600	0.00098594
8.5300	0.00099156	8.7750	0.00086875
8.9150	0.00088125	8.9900	0.00086938
9.5750	0.00132375	9.6500	0.00127844
9.6550	0.00127937	9.7850	0.00121188
9.7950	0.00121219	10.4350	0.00083531
10.4400	0.00083562	10.4500	0.00083531
11.0750	0.00118500	11.6250	0.00087719
11.6750	0.00088094	11.8450	0.00082875
12.3550	0.00118188	12.7650	0.00081719
12.8700	0.00084406	13.0800	0.00065500
13.2350	0.00069594	13.3850	0.00068000
13.6950	0.00095406	14.2350	0.00038719
14.3850	0.00041656	14.4100	0.00040312
14.5500	0.00046719	14.6700	0.00040656
14.8550	0.00049563	16.0000	-0.00135313

Table 3.79: Segment 3 south-west corner Z direction interstory drift ratio

Time	Maximum	Time	Minimum
0.0250	0.00061522	0.0050	0.00061519
0.0350	0.00061522	0.0300	0.00061519
0.2150	0.00062375	0.1150	0.00061247
0.4950	0.00062350	0.3500	0.00060122
0.5850	0.00061850	0.5800	0.00061847
0.7400	0.00062328	0.6600	0.00061184
1.0050	0.00062350	0.8750	0.00060456
1.2100	0.00062759	1.1150	0.00061994
1.4450	0.00061169	1.3250	0.00059184
1.5100	0.00061297	1.4750	0.00061047
1.6250	0.00061572	1.5700	0.00060606
1.7500	0.00061759	1.6850	0.00060931
1.8900	0.00063188	1.7850	0.00061594
2.2500	0.00063641	2.0650	0.00059316
2.3250	0.00063894	2.2800	0.00063453
2.4500	0.00064428	2.3600	0.00063628
2.7200	0.00070087	2.5900	0.00059928
3.0300	0.00063706	2.9050	0.00054400
3.6650	0.00072719	3.2100	0.00047991
3.7550	0.00072187	3.7050	0.00071469
3.8450	0.00074031	3.7800	0.00072000
4.0150	0.00057063	4.0050	0.00057031
4.1300	0.00062406	4.0200	0.00057062
4.4800	0.00055003	4.3300	0.00040072
4.8000	0.00066031	4.5850	0.00053184
5.0550	0.00080625	4.9000	0.00063844
5.3150	0.00066438	5.2200	0.00062969
5.6750	0.00073434	5.4850	0.00047359
6.0450	0.00101375	5.8200	0.00049247
6.4550	0.00023750	6.3950	0.00021531
6.8450	0.00026000	6.6400	0.00007656
7.1900	0.00035938	6.9750	0.00018156
7.5300	0.00040063	7.3250	0.00028969
7.8000	0.00031750	7.7100	0.00028938
8.2050	0.00026750	8.0700	0.00018563
8.5800	0.00025094	8.3950	0.00016437
8.7350	0.00019688	8.7300	0.00019687
8.9200	0.00024438	8.7400	0.00019656
9.3300	0.00028906	9.0150	0.00022094
9.4250	0.00029844	9.3600	0.00028719
9.6650	0.00021875	9.6500	0.00021719
9.8300	0.00018438	9.7750	0.00017594
10.3900	0.00014594	10.1650	0.00009687
10.4700	0.00014156	10.4650	0.00014125
10.5150	0.00014188	10.4900	0.00014094
10.7750	0.00020031	10.5200	0.00014187
11.0800	0.00022125	10.9050	0.00017812
11.4050	0.00017531	11.2450	0.00012719
11.7050	0.00018375	11.5550	0.00013250
12.0550	0.00020375	11.8600	0.00013094
12.3150	0.00018500	12.1900	0.00016281
12.3900	0.00009250	12.3850	0.00009062
12.4500	0.00008844	12.4200	0.00008375
12.8950	-0.00002094	12.7400	-0.00011969
13.2350	-0.00003844	13.0500	-0.00012938
13.6700	-0.00000062	13.5050	-0.00009125
13.9900	-0.00027719	13.8800	-0.00030437
14.3800	-0.00036031	14.2050	-0.00044031
14.5600	-0.00030656	14.4250	-0.00039406
14.8450	-0.00034187	14.7000	-0.00039250

Table 3.80: Segment 4 south-west corner Z direction interstory drift ratio

Time	Maximum	Time	Minimum
0.0350	0.00056963	0.0050	0.00056956
0.0450	0.00056963	0.0400	0.00056944
0.1100	0.00056697	0.1050	0.00056691
0.2100	0.00057816	0.1150	0.00056684
0.2200	0.00057809	0.2150	0.00057803
0.4850	0.00057859	0.3500	0.00055728
0.5000	0.00057856	0.4900	0.00057834
0.5800	0.00057359	0.5750	0.00057344
0.5900	0.00057347	0.5850	0.00057344
0.7400	0.00057809	0.6550	0.00056741
1.0050	0.00057506	0.9000	0.00056081
1.0250	0.00057488	1.0200	0.00057478
1.0350	0.00057484	1.0300	0.00057481
1.0450	0.00057488	1.0400	0.00057469
1.0550	0.00057475	1.0500	0.00057472
1.0850	0.00057516	1.0600	0.00057466
1.2150	0.00058278	1.1100	0.00057381
1.4400	0.00056628	1.3250	0.00055300
1.4600	0.00056612	1.4550	0.00056609
1.5100	0.00056878	1.4700	0.00056584
1.6200	0.00057037	1.5700	0.00056231
1.7450	0.00056484	1.6950	0.00055894
1.8850	0.00058191	1.7850	0.00056341
2.1750	0.00057331	2.0650	0.00054319
2.4400	0.00055856	2.3550	0.00053747
2.7350	0.00062088	2.5850	0.00046669
3.0600	0.00076884	2.8550	0.00055206
3.3150	0.00070806	3.2000	0.00065628
3.8550	0.00039375	3.7500	0.00035687
4.1950	0.00059719	3.9700	0.00029062
4.3100	0.00061222	4.2100	0.00059656
4.4600	0.00076684	4.3150	0.00061216
4.7250	0.00056844	4.6850	0.00056094
5.0550	0.00045344	4.9400	0.00035156
5.6700	0.00113744	5.1800	0.00035625
5.9250	0.00079906	5.8500	0.00075494
6.3700	-0.00007687	6.3600	-0.00008594
6.5000	-0.00005281	6.4000	-0.00010563
6.8950	0.00047344	6.5550	-0.00006531
7.1650	0.00063844	6.9500	0.00046406
7.7850	-0.00002031	7.7350	-0.00003250
8.2850	0.00009250	8.0450	-0.00009781
8.6450	0.00035063	8.3350	0.00008625
8.9250	0.00046625	8.6850	0.00034906
9.6800	-0.00011750	9.6550	-0.00012656
9.7550	-0.00014000	9.7500	-0.00014031
10.4100	0.00028563	9.7600	-0.00014031
11.0900	0.00001437	10.9750	-0.00001406
11.7200	0.00032313	11.2100	-0.00002594
12.3950	-0.00019438	12.3800	-0.00020219
12.4550	-0.00018250	12.4100	-0.00019781
12.5000	-0.00017750	12.4750	-0.00018625
12.5350	-0.00017094	12.5050	-0.00017781
12.6000	-0.00017594	12.5750	-0.00018125
12.9250	-0.00007594	12.7250	-0.00028625
13.2400	0.00006562	13.0150	-0.00011063
14.0050	-0.00041812	13.8650	-0.00052062
14.3800	-0.00033094	14.1750	-0.00051937
14.5650	-0.00023219	14.4350	-0.00037719
14.8300	-0.00033688	14.7250	-0.00035375

Table 3.81: Segment 5 south-west corner Z direction interstory drift ratio

Time	Maximum	Time	Minimum
0.1100	-0.00067063	0.0050	-0.00067272
0.3450	-0.00066678	0.2200	-0.00068497
0.6600	-0.00068450	0.5100	-0.00069488
0.8650	-0.00067981	0.7450	-0.00069713
1.0950	-0.00070803	1.0150	-0.00070888
1.5750	-0.00061119	1.2050	-0.00072066
1.6850	-0.00061269	1.6250	-0.00061800
1.7900	-0.00061516	1.7400	-0.00061906
2.2800	-0.00049594	1.9500	-0.00065547
2.4850	-0.00040663	2.3250	-0.00050413
3.6600	0.00032319	3.1150	-0.00186959
4.9150	-0.00028899	4.3250	-0.00239906
6.1400	-0.00045825	5.5950	-0.00365938
7.4000	-0.00280019	6.8250	-0.00509313
8.4800	-0.00327219	7.9600	-0.00441656
9.6400	-0.00365781	9.2200	-0.00422219
9.7450	-0.00376750	9.7050	-0.00378250
10.9900	-0.00333438	10.4100	-0.00461469
12.3600	-0.00333563	11.7250	-0.00490156
12.7450	-0.00424969	12.6300	-0.00432719
13.0950	-0.00435469	12.9350	-0.00454031
13.4750	-0.00433813	13.2750	-0.00452531
13.7650	-0.00443781	13.6600	-0.00448938
14.6900	-0.00419625	14.0400	-0.00519656

Table 3.82: Segment 1 south-east corner Z direction interstory drift ratio

Time	Maximum	Time	Minimum
0.0300	0.00067322	0.0050	0.00067319
0.2200	0.00068459	0.1100	0.00067078
0.5100	0.00069197	0.3450	0.00066522
0.5800	0.00068838	0.5750	0.00068837
0.7400	0.00069356	0.6600	0.00068119
1.0050	0.00070209	0.8650	0.00067572
1.2100	0.00071372	1.1000	0.00069997
1.3650	0.00065741	1.3500	0.00065725
1.4200	0.00065659	1.4000	0.00065631
1.6250	0.00063334	1.5750	0.00062447
1.7400	0.00063241	1.6850	0.00062688
1.9450	0.00066513	1.7900	0.00062781
2.3200	0.00054294	2.2900	0.00053944
3.0700	0.00130231	2.5100	0.00048172
4.2900	0.00174512	3.6450	-0.00032431
4.3150	0.00174484	4.3050	0.00174462
5.6300	0.00268844	4.9250	0.00017161
6.8400	0.00448844	6.1250	0.00057184
7.9650	0.00408781	7.3750	0.00274153
8.6200	0.00323531	8.4750	0.00315875
9.2250	0.00386531	8.7000	0.00322187
9.8550	0.00346781	9.7500	0.00343937
10.4000	0.00402219	9.8700	0.00346719
11.7300	0.00423500	10.9850	0.00308813
12.6200	0.00385344	12.3600	0.00309313
12.9350	0.00399250	12.7550	0.00374156
13.2750	0.00395219	13.1000	0.00378031
13.6700	0.00394031	13.4650	0.00377000
14.0400	0.00446875	13.7800	0.00388375
14.4000	0.00403625	14.3350	0.00402062
16.0000	0.00654094	14.6650	0.00386937

Table 3.83: Segment 2 south-east corner Z direction interstory drift ratio

Time	Maximum	Time	Minimum
0.0050	0.00064494	0.1100	0.00064228
0.2150	0.00065491	0.3500	0.00063509
0.5050	0.00065931	0.5750	0.00065562
0.5850	0.00065569	0.6600	0.00064866
0.7400	0.00066000	0.8650	0.00064259
1.0000	0.00066519	1.1050	0.00066144
1.2150	0.00067591	1.3400	0.00062878
1.3800	0.00063044	1.3950	0.00063034
1.4250	0.00063175	1.5700	0.00061219
1.6300	0.00062259	1.6900	0.00061531
1.7400	0.00061950	1.7900	0.00061472
1.9400	0.00064719	2.1000	0.00060484
2.1200	0.00060522	2.3800	0.00055003
2.4550	0.00055406	2.6000	0.00049606
2.7950	0.00080413	2.8450	0.00079513
3.0700	0.00106297	3.6200	0.00005388
4.1650	0.00118375	4.3550	0.00106562
4.4150	0.00108094	4.9300	0.00010100
5.3500	0.00117156	5.4950	0.00107656
5.6500	0.00130750	6.1100	0.00019453
6.8450	0.00242906	7.3500	0.00131719
7.9750	0.00215438	8.4600	0.00155406
8.6150	0.00166906	8.7250	0.00161281
8.9650	0.00194656	9.0100	0.00194250
9.2150	0.00204000	9.3950	0.00194812
9.4000	0.00194844	9.4050	0.00194812
9.4150	0.00194844	9.6750	0.00173406
9.8250	0.00178719	9.9150	0.00175938
10.4000	0.00214219	10.9850	0.00156063
11.7350	0.00227844	12.3550	0.00156813
12.6150	0.00218969	12.7650	0.00205281
12.9350	0.00226219	13.1000	0.00205125
13.2750	0.00222500	13.4550	0.00206250
13.6550	0.00220750	13.7950	0.00213250
14.0450	0.00259469	14.2650	0.00230406
14.4150	0.00240313	14.4300	0.00240031
14.4800	0.00241000	14.5850	0.00235969
14.5950	0.00236000	14.6450	0.00234688

Table 3.84: Segment 3 south-east corner Z direction interstory drift ratio

Time	Maximum	Time	Minimum
0.0050	0.00061522	0.1150	0.00061219
0.2150	0.00062356	0.3500	0.00060334
0.5000	0.00062478	0.5750	0.00062100
0.5900	0.00062116	0.6600	0.00061431
0.7400	0.00062431	0.8650	0.00060756
1.0000	0.00062612	1.1050	0.00062034
1.2200	0.00063575	1.3300	0.00059828
1.4350	0.00060625	1.4800	0.00060306
1.5100	0.00060469	1.5650	0.00059981
1.6300	0.00061184	1.7000	0.00060412
1.7350	0.00060688	1.7900	0.00060191
1.9350	0.00062897	2.0750	0.00059816
2.1700	0.00061469	2.2050	0.00061266
2.2300	0.00061394	2.3550	0.00057319
2.4650	0.00062722	2.6100	0.00050059
2.7750	0.00072159	2.9100	0.00059472
3.0650	0.00080219	3.2250	0.00062562
3.3300	0.00065784	3.5850	0.00041925
3.9200	0.00065594	3.9650	0.00065022
4.1600	0.00089812	4.3500	0.00073437
4.4550	0.00081094	4.6750	0.00054641
4.7800	0.00061769	4.9400	0.00041269
5.0900	0.00068681	5.2050	0.00057281
5.3450	0.00086219	5.5200	0.00063156
5.6700	0.00088312	5.8500	0.00040687
6.0400	0.00063081	6.1100	0.00059078
6.3350	0.00116594	6.3600	0.00110969
6.5100	0.00128688	6.7350	0.00103812
6.8200	0.00105781	7.0150	0.00075906
7.1450	0.00084687	7.3250	0.00055813
7.5000	0.00072594	7.6000	0.00069594
7.8000	0.00087344	7.8250	0.00087250
7.9950	0.00095937	8.1500	0.00084344
8.2700	0.00087750	8.4500	0.00067844
8.6000	0.00082500	8.7550	0.00068250
8.9300	0.00087875	9.0550	0.00080094
9.2150	0.00088562	9.3650	0.00082187
9.4650	0.00086781	9.6750	0.00077063
9.8200	0.00086281	9.9550	0.00077750
10.1000	0.00085500	10.2100	0.00080563
10.3950	0.00092406	10.5400	0.00084750
10.6000	0.00085687	10.8400	0.00072500
10.9700	0.00076688	10.9750	0.00076656
10.9800	0.00076688	10.9850	0.00076687
10.9900	0.00076688	11.0000	0.00076656
11.1250	0.00077312	11.1300	0.00077281
11.1350	0.00077313	11.1900	0.00077094
11.5150	0.00089688	11.5600	0.00089406
11.7400	0.00097344	11.9450	0.00085844
12.0450	0.00088000	12.2250	0.00073844
12.3550	0.00078656	12.3750	0.00077750
12.6100	0.00120031	12.7750	0.00103312
12.9300	0.00119219	13.1050	0.00096844
13.2750	0.00113906	13.4400	0.00099625
13.6550	0.00115156	13.8000	0.00107500
14.0500	0.00143094	14.2400	0.00124469
14.4900	0.00144531	14.5900	0.00142531
14.9600	0.00160656	14.9700	0.00160313

Table 3.85: Segment 4 south-east corner Z direction interstory drift ratio

Time	Maximum	Time	Minimum
0.0350	0.00056963	0.0050	0.00056956
0.0450	0.00056959	0.0400	0.00056941
0.2150	0.00057609	0.1200	0.00056634
0.3550	0.00055578	0.3500	0.00055575
0.4950	0.00057384	0.3600	0.00055572
0.5100	0.00057353	0.5050	0.00057350
0.5800	0.00057000	0.5750	0.00056969
0.5900	0.00057009	0.5850	0.00056994
0.6600	0.00056384	0.6550	0.00056381
0.7400	0.00057194	0.6650	0.00056353
0.8850	0.00055644	0.8700	0.00055600
0.9000	0.00055653	0.8950	0.00055631
1.0000	0.00056987	0.9100	0.00055644
1.0650	0.00056403	1.0600	0.00056400
1.2250	0.00057788	1.1100	0.00056184
1.5200	0.00057406	1.3250	0.00055159
1.6300	0.00058753	1.5500	0.00057297
1.7350	0.00058131	1.7050	0.00057972
1.9300	0.00059606	1.7900	0.00057597
2.2450	0.00063800	2.0500	0.00057131
2.4700	0.00069559	2.3450	0.00058506
2.7600	0.00062094	2.6250	0.00049466
3.0650	0.00048063	2.9300	0.00031625
3.7450	0.00093913	3.2000	0.00031125
4.1450	0.00054125	4.0950	0.00052875
4.5550	0.00059719	4.3350	0.00032875
4.8150	0.00093437	4.6050	0.00058812
5.0600	0.00091587	4.9450	0.00075284
5.3400	0.00048688	5.2550	0.00042281
5.7000	0.00055188	5.5150	0.00015125
6.0500	0.00113963	5.8050	0.00043906
6.3000	0.00142438	6.1150	0.00110947
6.4050	0.00117219	6.3950	0.00117063
6.8300	0.00055250	6.7300	0.00050812
7.2000	0.00079875	6.9800	0.00036125
7.4700	0.00097625	7.3000	0.00072844
7.7200	0.00082750	7.6450	0.00081688
8.0200	0.00071469	7.9050	0.00065750
8.3150	0.00087250	8.1250	0.00064687
8.5950	0.00095000	8.4400	0.00077844
8.9050	0.00075375	8.7800	0.00067906
9.2150	0.00064250	9.0700	0.00056000
9.5450	0.00080281	9.3300	0.00060844
9.5950	0.00080094	9.5850	0.00080062
9.6500	0.00081000	9.6100	0.00079969
9.8150	0.00093813	9.6800	0.00080312
10.0550	0.00078344	9.9850	0.00076906
10.3850	0.00062656	10.2550	0.00057281
10.9900	0.00097344	10.5050	0.00056937
11.7600	0.00057594	11.6500	0.00053844
12.3550	0.00101000	11.8750	0.00054312
12.5750	0.00119281	12.3950	0.00091594
12.9300	0.00106906	12.7950	0.00097063
13.2750	0.00098469	13.1100	0.00082750
13.6600	0.00105531	13.4250	0.00086594
14.0700	0.00125313	13.8000	0.00100469
14.3850	0.00135219	14.2200	0.00115781
14.5700	0.00142781	14.3950	0.00135094
14.8500	0.00155188	14.5950	0.00141125
14.9550	0.00157812	14.8550	0.00155187
16.0000	0.00339187	14.9950	0.00155937

Table 3.86: Segment 5 south-east corner Z direction interstory drift ratio

Time	Maximum	Time	Minimum
0.1150	-0.00066944	0.0050	-0.00067281
0.3600	-0.00065019	0.2100	-0.00067819
0.6600	-0.00065509	0.4900	-0.00066922
0.8950	-0.00064297	0.7400	-0.00066519
1.1150	-0.00063922	0.9900	-0.00065606
1.3050	-0.00064175	1.2300	-0.00065581
1.8500	-0.00071263	1.7250	-0.00073903
2.0450	-0.00070103	1.9300	-0.00071709
2.3850	-0.00086053	2.2800	-0.00090291
3.1350	0.00020362	2.5200	-0.00093359
4.2900	-0.00062953	3.7600	-0.00302591
5.4850	-0.00043231	4.8850	-0.00298512
6.3400	-0.00826063	6.3050	-0.00831906
6.9450	-0.00508031	6.3550	-0.00827688
8.0150	-0.00635281	7.5300	-0.00745469
9.1500	-0.00602438	8.5400	-0.00733594
10.4250	-0.00611125	9.8150	-0.00752000
11.7800	-0.00613250	11.0600	-0.00808031
13.1450	-0.01080531	12.6150	-0.01249531
13.3950	-0.01085281	13.2900	-0.01088813

Table 3.87: Segment 1 north-west corner Z direction interstory drift ratio

Time	Maximum	Time	Minimum
0.0050	0.00067338	0.0250	0.00067334
0.0300	0.00067337	0.1150	0.00067009
0.2100	0.00067991	0.3600	0.00065272
0.4900	0.00067313	0.6600	0.00065912
0.7400	0.00067034	0.8900	0.00064841
0.9950	0.00066359	1.1150	0.00064791
1.2250	0.00066331	1.3100	0.00064450
1.5150	0.00069091	1.5450	0.00069013
1.7300	0.00072691	1.8450	0.00070109
1.9350	0.00070856	2.0550	0.00068937
2.2900	0.00086106	2.4150	0.00080522
2.5450	0.00087691	3.1200	0.00001178
3.5400	0.00130372	3.5750	0.00129403
3.7700	0.00233906	4.2800	0.00054406
4.8950	0.00233053	5.4700	0.00048894
6.3150	0.00411125	6.3400	0.00409687
6.3550	0.00412500	6.9500	0.00217000
7.5450	0.00382781	8.0250	0.00301906
8.5300	0.00375406	9.1550	0.00272875
9.8200	0.00388250	10.4150	0.00276969
11.0650	0.00404469	11.7900	0.00260813
12.3450	0.00406500	12.4050	0.00353844
12.4400	0.00356500	12.4950	0.00348500
12.5050	0.00348625	13.1200	0.00290781
13.2900	0.00296063	13.4050	0.00293375
13.8950	0.00343531	14.9550	0.00225031
14.9700	0.00225719	15.0100	0.00223094
15.0500	0.00224406	16.0000	0.00102187

Table 3.88: Segment 2 north-west corner Z direction interstory drift ratio

Time	Maximum	Time	Minimum
0.0050	0.00064519	0.1150	0.00064222
0.2100	0.00065262	0.3550	0.00062753
0.4900	0.00064847	0.6600	0.00063525
0.7400	0.00064716	0.8750	0.00062594
0.9950	0.00064334	1.1150	0.00062969
1.2200	0.00064306	1.3150	0.00061969
1.4400	0.00065309	1.4800	0.00065081
1.5100	0.00065219	1.5550	0.00064838
1.7300	0.00068294	1.8400	0.00065878
1.9400	0.00066922	2.0700	0.00064631
2.3050	0.00078156	2.4350	0.00069856
2.5650	0.00079244	2.8450	0.00046884
2.8650	0.00046991	3.1000	0.00023057
3.5350	0.00104488	3.6450	0.00097312
3.7800	0.00108437	4.2700	-0.00002484
4.9100	0.00108188	5.4450	0.00000603
6.1000	0.00191594	6.2750	0.00184344
6.3350	0.00186813	6.7050	0.00090156
6.7400	0.00090250	6.9500	0.00081125
7.5500	0.00184219	8.0300	0.00123375
8.3000	0.00159969	8.3050	0.00159938
8.5250	0.00177187	9.1650	0.00112312
9.7350	0.00180844	9.7750	0.00180094
9.8400	0.00181500	10.4050	0.00114406
11.0750	0.00191781	11.8000	0.00102937
12.3400	0.00190406	12.4000	0.00149375
12.4400	0.00151312	12.4850	0.00144844
12.5000	0.00144906	12.5650	0.00143219
12.5750	0.00143281	12.7850	0.00124156
12.8850	0.00126156	13.0900	0.00110375
13.2950	0.00116219	13.4250	0.00113250
13.6900	0.00135312	13.8000	0.00130781
13.9300	0.00137562	14.9550	0.00053375
14.9700	0.00054000	15.0150	0.00051188
15.0500	0.00051719	15.1150	0.00050094
15.1200	0.00050125	16.0000	-0.00066562

Table 3.89: Segment 3 north-west corner Z direction interstory drift ratio

Time	Maximum	Time	Minimum
0.0050	0.00061553	0.1150	0.00061297
0.2150	0.00062388	0.3500	0.00060109
0.4950	0.00062272	0.6550	0.00061028
0.7400	0.00062291	0.8700	0.00060250
0.9950	0.00062234	1.1150	0.00061125
1.2200	0.00062259	1.3200	0.00059363
1.4350	0.00061928	1.5600	0.00060322
1.7350	0.00063569	1.8400	0.00061366
1.9450	0.00062750	2.0900	0.00059725
2.3150	0.00069759	2.4500	0.00057497
2.5850	0.00071072	2.8000	0.00052588
2.9200	0.00062937	3.0800	0.00045788
3.2500	0.00056166	3.2900	0.00056006
3.5300	0.00075406	3.6500	0.00062031
3.7900	0.00072875	3.9800	0.00043375
4.0800	0.00046022	4.2500	0.00029178
4.4550	0.00049587	4.5200	0.00047547
4.7400	0.00063656	4.7750	0.00063281
4.9300	0.00071500	5.4050	0.00036134
5.7200	0.00070062	5.8100	0.00066375
5.9250	0.00081938	6.2300	0.00045594
6.3400	0.00054906	6.3550	0.00051375
6.3750	0.00053062	6.6050	0.00017250
6.7800	0.00032844	6.9700	0.00027156
7.2500	0.00058687	7.4000	0.00048906
7.5700	0.00067531	7.7400	0.00045250
7.8800	0.00055406	8.0400	0.00035906
8.2050	0.00060094	8.3450	0.00049937
8.5100	0.00062719	8.9050	0.00042281
8.9450	0.00042500	8.9900	0.00042281
9.0150	0.00042375	9.1750	0.00034938
9.4400	0.00047656	9.4600	0.00047594
9.6750	0.00065469	9.7800	0.00061156
9.9200	0.00064594	10.1800	0.00046781
10.2100	0.00046875	10.3850	0.00036687
10.5950	0.00043531	10.6100	0.00043469
10.8350	0.00060875	10.9200	0.00059437
11.0850	0.00066906	11.2650	0.00052688
11.3500	0.00054219	11.5750	0.00036219
11.6850	0.00039281	11.8300	0.00033406
12.3300	0.00062656	12.3850	0.00036906
12.4000	0.00037500	12.4150	0.00037187
12.4450	0.00038375	12.4750	0.00035281
12.5450	0.00036219	12.5650	0.00035938
12.5850	0.00036438	12.7550	0.00023375
12.8950	0.00029656	13.0650	0.00019531
13.3100	0.00026188	13.4550	0.00022000
13.6700	0.00035313	13.8050	0.00023750
13.9600	0.00032719	14.4600	-0.00006469
14.5000	-0.00005875	14.7200	-0.00026937
14.8050	-0.00026031	15.0200	-0.00040031
15.0550	-0.00039500	15.0750	-0.00039656
15.1400	-0.00039188	16.0000	-0.00155938

Table 3.90: Segment 4 north-west corner Z direction interstory drift ratio

Time	Maximum	Time	Minimum
0.0350	0.00056975	0.0050	0.00056966
0.0450	0.00056972	0.0400	0.00056953
0.0550	0.00056944	0.0500	0.00056938
0.0650	0.00056934	0.0600	0.00056931
0.2150	0.00057869	0.1150	0.00056747
0.4800	0.00058084	0.3500	0.00055903
0.5000	0.00058122	0.4850	0.00058072
0.5850	0.00057637	0.5800	0.00057628
0.7450	0.00058294	0.6550	0.00056963
1.0000	0.00058606	0.8700	0.00056387
1.2150	0.00058728	1.1150	0.00057822
1.4300	0.00056853	1.3250	0.00055209
1.6550	0.00055881	1.5700	0.00053963
1.7400	0.00056894	1.6600	0.00055875
1.9600	0.00056853	1.8300	0.00055044
1.9750	0.00056853	1.9650	0.00056834
2.3250	0.00058937	2.1350	0.00052359
2.6150	0.00061562	2.4600	0.00042134
2.9500	0.00083294	2.7700	0.00054525
3.1950	0.00079700	3.0700	0.00070147
3.8200	0.00035469	3.6700	0.00018313
4.1450	0.00070306	3.9200	0.00029375
4.4000	0.00077506	4.2150	0.00065975
5.0350	0.00034188	4.8250	0.00025094
5.5450	0.00091656	5.0400	0.00034187
6.3400	0.00010375	6.2150	-0.00010187
6.4600	0.00026812	6.3550	0.00007687
6.8000	0.00071125	6.5250	0.00025156
7.5900	0.00036969	7.4250	0.00013750
7.8950	0.00059687	7.7150	0.00027906
8.1750	0.00056000	8.0450	0.00040281
8.4900	0.00035219	8.3650	0.00026937
9.0700	0.00054969	8.6300	0.00029094
9.3200	0.00053844	9.1900	0.00048156
9.6400	0.00040969	9.5300	0.00038250
9.6750	0.00041094	9.6600	0.00040781
9.9550	0.00042031	9.7900	0.00031281
10.2700	0.00055313	10.0650	0.00037906
10.4950	0.00056438	10.3700	0.00051500
10.7450	0.00038531	10.7050	0.00038344
11.1000	0.00029406	10.9600	0.00021281
11.7000	0.00064781	11.2100	0.00024094
12.3950	0.00012437	12.3750	0.00008312
12.4600	0.00012281	12.4250	0.00010344
12.6050	0.00018719	12.4700	0.00011969
12.9150	0.00023469	12.7300	0.00010625
13.3200	0.00026469	13.0450	0.00018062
13.6550	0.00025500	13.5150	0.00018219
13.9750	0.00021313	13.8100	0.00008219
14.5000	-0.00015437	14.4450	-0.00017219
14.8300	-0.00031969	14.7150	-0.00035750
15.0000	-0.00041812	14.9750	-0.00042562
15.1700	-0.00035875	15.0250	-0.00042312

Table 3.91: Segment 5 north-west corner Z direction interstory drift ratio

Time	Maximum	Time	Minimum
0.1100	-0.00066997	0.0050	-0.00067281
0.3500	-0.00066150	0.2150	-0.00068303
0.6600	-0.00067291	0.4950	-0.00068503
0.8850	-0.00066475	0.7400	-0.00068388
1.1000	-0.00066966	0.9900	-0.00067775
1.3250	-0.00066741	1.2250	-0.00069356
1.5600	-0.00065737	1.4150	-0.00067269
1.8200	-0.00064366	1.6350	-0.00067575
2.0900	-0.00064425	1.9550	-0.00067209
2.4250	-0.00051084	2.1650	-0.00065100
2.6200	-0.00045259	2.4750	-0.00051600
3.9050	-0.00002208	3.2400	-0.00133294
5.0000	-0.00078772	4.4300	-0.00237966
5.1100	-0.00079194	5.0600	-0.00079716
6.2450	-0.00173978	5.6850	-0.00436875
6.3450	-0.00172234	6.2950	-0.00174731
6.3700	-0.00170281	6.3550	-0.00172463
6.3950	-0.00171791	6.3900	-0.00171838
7.8350	-0.00236197	7.1400	-0.00468969
9.7000	-0.00214966	8.9350	-0.00423375
11.0150	-0.00260225	10.4350	-0.00371750
12.3600	-0.00244103	11.7550	-0.00380438
12.3950	-0.00248478	12.3800	-0.00249253
12.7400	-0.00292278	12.6200	-0.00303791
13.8150	-0.00247769	13.2800	-0.00392281
14.6000	-0.00413844	14.5900	-0.00413937
15.4450	-0.00333656	14.7500	-0.00418625
15.7850	-0.00350469	15.6900	-0.00352406

Table 3.92: Segment 1 north-east corner Z direction interstory drift ratio

Time	Maximum	Time	Minimum
0.0050	0.00067338	0.0250	0.00067334
0.0350	0.00067337	0.1100	0.00067038
0.2150	0.00068325	0.3550	0.00066131
0.4950	0.00068475	0.6550	0.00067250
0.7400	0.00068394	0.8700	0.00066459
0.9900	0.00068003	1.1050	0.00066997
1.2250	0.00069316	1.3250	0.00066513
1.4200	0.00067294	1.5600	0.00065638
1.6400	0.00067797	1.8250	0.00064709
1.9850	0.00067753	2.0900	0.00064794
2.1750	0.00065619	2.1950	0.00065575
2.2300	0.00065775	2.4250	0.00053762
2.5250	0.00055694	2.6350	0.00050456
3.2350	0.00118813	3.6700	0.00029594
3.7650	0.00031515	3.9100	0.00025310
4.4400	0.00163841	4.9900	0.00041466
5.0650	0.00043488	5.1250	0.00042728
5.6850	0.00307594	6.1950	0.00137187
6.3850	0.00159625	6.4000	0.00159244
7.1500	0.00358313	7.8150	0.00199606
7.9400	0.00205022	8.0200	0.00204362
8.9400	0.00333281	9.6500	0.00193022
10.4400	0.00305625	11.0000	0.00228047
11.7500	0.00313844	12.3550	0.00219034
12.6050	0.00277472	12.7500	0.00263838
12.9750	0.00307125	13.0600	0.00304031
13.2800	0.00334250	13.8200	0.00236356
14.0950	0.00284413	14.1400	0.00284000
14.5900	0.00374969	14.6000	0.00374875
14.7850	0.00384781	14.9600	0.00373906
14.9750	0.00374250	14.9850	0.00374188
15.2150	0.00387813	15.3300	0.00385813

Table 3.93: Segment 2 north-east corner Z direction interstory drift ratio

Time	Maximum	Time	Minimum
0.0050	0.00064519	0.1150	0.00064222
0.2150	0.00065425	0.3500	0.00063300
0.5000	0.00065519	0.5800	0.00065062
0.5850	0.00065063	0.6600	0.00064334
0.7400	0.00065475	0.8650	0.00063578
0.9900	0.00065334	1.1100	0.00064159
1.2250	0.00066306	1.3250	0.00063397
1.4250	0.00064453	1.5600	0.00062728
1.6450	0.00065131	1.6950	0.00065009
1.7200	0.00065072	1.8300	0.00062316
1.9900	0.00065506	2.0950	0.00062422
2.2500	0.00064834	2.4300	0.00054241
2.5450	0.00059316	2.6600	0.00053153
3.2300	0.00096269	3.6250	0.00039584
3.7800	0.00051494	3.9250	0.00043533
4.3050	0.00114169	4.3200	0.00114000
4.4000	0.00117437	4.9800	0.00038444
5.0700	0.00041766	5.1600	0.00040081
5.4550	0.00115813	5.5050	0.00112219
5.6950	0.00170781	6.1650	0.00076469
6.4500	0.00118531	6.4950	0.00117781
6.5050	0.00117813	6.5300	0.00117656
6.8850	0.00208969	6.9800	0.00204375
7.1650	0.00216344	7.7400	0.00128625
7.9300	0.00137750	8.0450	0.00134500
8.6200	0.00191188	8.7300	0.00187219
8.9400	0.00205812	9.5950	0.00131781
9.6350	0.00132438	9.6600	0.00132250
10.4400	0.00193500	10.9900	0.00151031
11.1400	0.00154375	11.1700	0.00154250
11.7450	0.00199656	12.3750	0.00145656
12.6150	0.00192219	12.7650	0.00177281
12.9600	0.00206750	13.0850	0.00197156
13.2850	0.00220469	13.7900	0.00166375
14.0650	0.00208969	14.2000	0.00204813
14.5950	0.00257281	14.6100	0.00257156
14.8000	0.00267875	14.9300	0.00264594

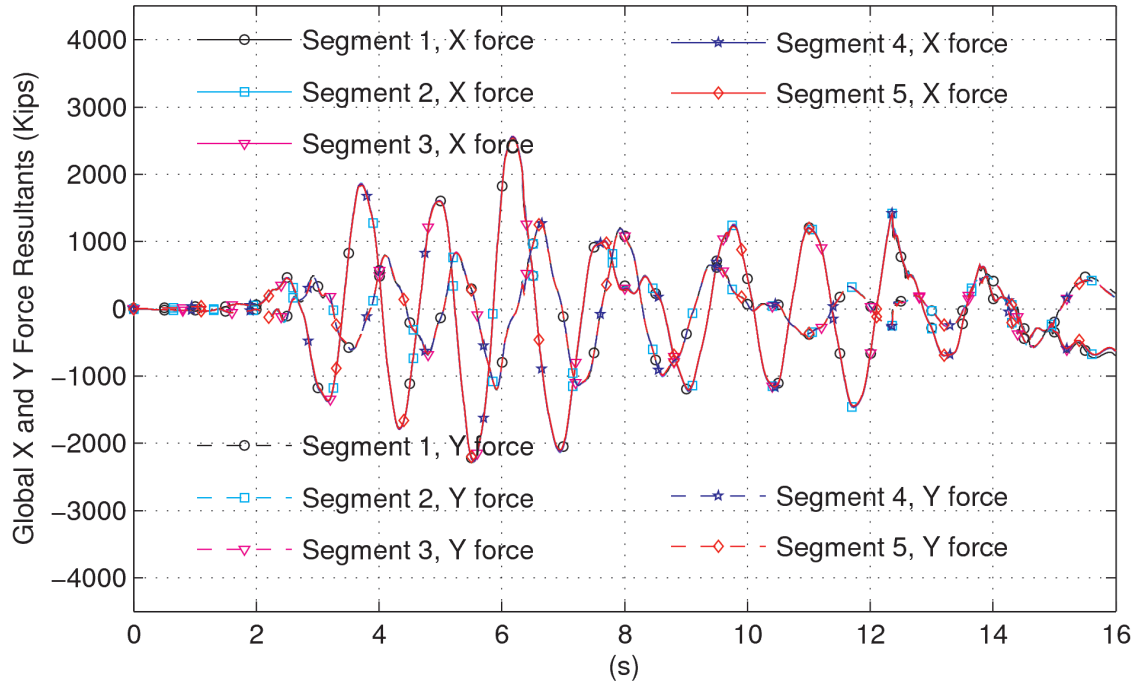
Table 3.94: Segment 3 north-east corner Z direction interstory drift ratio

Time	Maximum	Time	Minimum
0.0050	0.00061553	0.0200	0.00061550
0.0250	0.00061553	0.1150	0.00061272
0.2150	0.00062369	0.3550	0.00060319
0.5000	0.00062403	0.6600	0.00061278
0.7400	0.00062394	0.8650	0.00060547
0.9900	0.00062528	1.1100	0.00061188
1.2250	0.00063119	1.3250	0.00060066
1.4250	0.00061462	1.5550	0.00059662
1.7250	0.00062675	1.8350	0.00059825
1.9950	0.00063150	2.1000	0.00059934
2.2700	0.00064497	2.4300	0.00054888
2.5550	0.00063959	2.6950	0.00054688
2.9400	0.00068041	3.0500	0.00065469
3.2200	0.00072844	3.6100	0.00050322
3.7850	0.00070597	3.9450	0.00059791
4.1600	0.00078547	4.2050	0.00077906
4.3050	0.00082625	4.3200	0.00082375
4.4050	0.00085844	4.6750	0.00065375
4.7500	0.00068009	4.7550	0.00068000
4.7750	0.00068075	4.7850	0.00068059
4.7900	0.00068069	4.9650	0.00055619
5.0750	0.00060738	5.2150	0.00054209
5.4500	0.00080125	5.6300	0.00066156
5.6750	0.00066438	5.6800	0.00066437
5.6900	0.00066438	5.8650	0.00040437
6.0550	0.00048375	6.1200	0.00046812
6.4450	0.00097719	6.5800	0.00087156
6.8350	0.00121906	7.0150	0.00105000
7.1800	0.00114875	7.3850	0.00090625
7.5550	0.00101469	7.7200	0.00092812
7.9200	0.00105406	8.0650	0.00098594
8.2600	0.00108750	8.3950	0.00103344
8.5850	0.00114906	8.7650	0.00102469
8.9400	0.00114281	9.1650	0.00102656
9.2100	0.00103281	9.3850	0.00098781
9.4350	0.00099438	9.4800	0.00099125
9.6500	0.00104437	9.6650	0.00104250
9.8400	0.00111750	9.9800	0.00109188
10.1150	0.00113313	10.2100	0.00111625
10.4250	0.00114563	10.4300	0.00114562
10.4350	0.00114563	10.4400	0.00114531
10.4450	0.00114562	10.5600	0.00112812
10.5650	0.00112813	10.8650	0.00106375
10.8700	0.00106437	10.8750	0.00106406
11.1050	0.00111094	11.2250	0.00108344
11.4150	0.00114625	11.5600	0.00111219
11.7350	0.00119156	11.9250	0.00111312
12.0550	0.00114875	12.2150	0.00105781
12.3450	0.00111000	12.3800	0.00105438
12.6150	0.00145000	12.7850	0.00128156
12.9450	0.00144813	13.1100	0.00125750
13.2850	0.00143750	13.4450	0.00128563
13.6150	0.00140875	13.7700	0.00131656
14.0550	0.00167594	14.2400	0.00156969
14.3850	0.00170000	14.3900	0.00169969
14.4800	0.00178438	14.5850	0.00173219
14.6000	0.00173531	14.6150	0.00173469
14.8050	0.00184875	14.8150	0.00184812
14.8200	0.00184844	14.8600	0.00184469

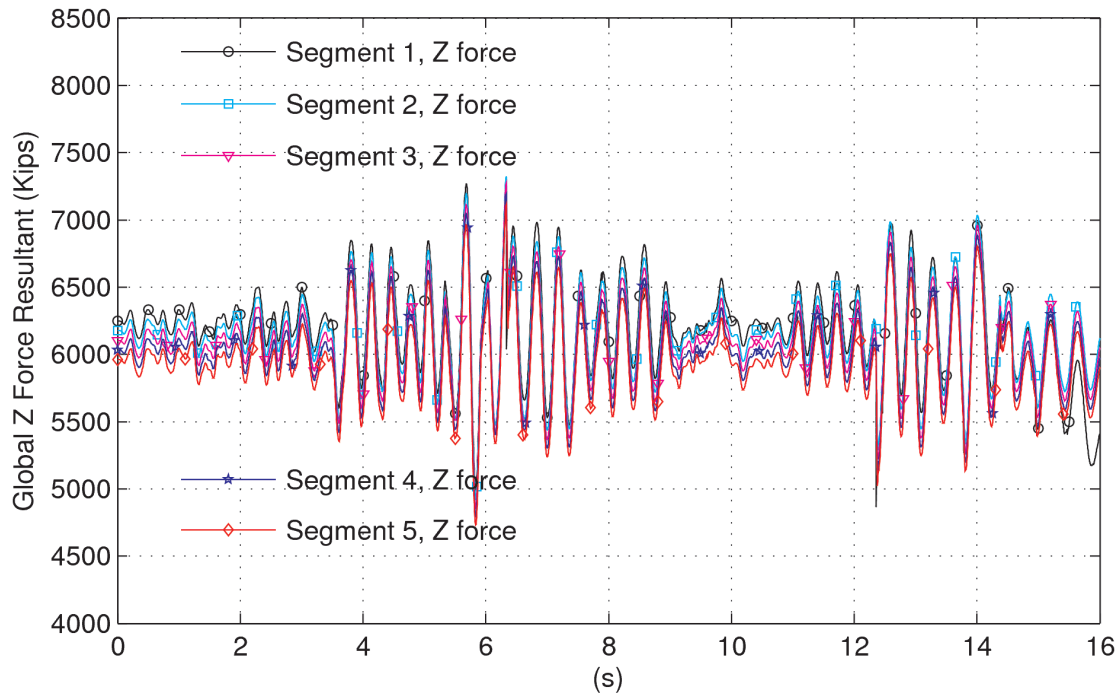
Table 3.95: Segment 4 north-east corner Z direction interstory drift ratio

Time	Maximum	Time	Minimum
0.0250	0.00056969	0.0050	0.00056966
0.0400	0.00056950	0.0350	0.00056944
0.0550	0.00056938	0.0500	0.00056931
0.0650	0.00056925	0.0600	0.00056922
0.0800	0.00056887	0.0750	0.00056878
0.2150	0.00057672	0.1200	0.00056703
0.4950	0.00057638	0.3550	0.00055747
0.5150	0.00057628	0.5050	0.00057616
0.5750	0.00057275	0.5700	0.00057266
0.5900	0.00057287	0.5800	0.00057266
0.7400	0.00057663	0.6700	0.00056591
0.9950	0.00058097	0.8600	0.00055906
1.2200	0.00058234	1.1100	0.00056612
1.4300	0.00056869	1.3250	0.00055072
1.7250	0.00058666	1.5550	0.00055025
1.9950	0.00059162	1.8400	0.00055834
2.3100	0.00064081	2.1050	0.00055881
2.5650	0.00067972	2.4350	0.00054631
2.8000	0.00056231	2.7250	0.00054172
2.8800	0.00057044	2.8250	0.00056169
3.1850	0.00045500	3.0750	0.00041688
3.5350	0.00061794	3.2900	0.00043219
3.7900	0.00093375	3.5750	0.00061303
4.4250	0.00050156	4.3200	0.00047750
4.5450	0.00048469	4.5150	0.00048437
4.9200	0.00075806	4.5750	0.00048344
5.0750	0.00083491	4.9450	0.00075728
5.7000	0.00021281	5.6250	0.00019625
6.3400	0.00133938	5.8200	0.00013000
6.4100	0.00135125	6.3650	0.00129313
7.2200	0.00068625	7.0400	0.00054000
7.9200	0.00130031	7.3100	0.00066625
8.1750	0.00119937	8.1000	0.00118313
8.5200	0.00094875	8.4850	0.00094781
8.9450	0.00075500	8.7950	0.00069531
9.6550	0.00133000	9.0450	0.00073125
9.8100	0.00136594	9.6850	0.00131906
10.3750	0.00087844	10.3700	0.00087813
10.3850	0.00087813	10.3800	0.00087812
11.0850	0.00123469	10.4250	0.00087719
11.7200	0.00090969	11.6400	0.00089812
12.3550	0.00129937	11.8750	0.00085469
12.5750	0.00153719	12.3800	0.00123250
12.6350	0.00152750	12.6150	0.00152344
12.9250	0.00137313	12.8200	0.00132375
13.2850	0.00119563	13.1350	0.00106312
13.7950	0.00152594	13.4200	0.00110031
14.0050	0.00178781	13.8050	0.00152406
14.3800	0.00158844	14.3000	0.00156719
14.4400	0.00161781	14.3950	0.00156875
16.0000	0.00405094	14.5900	0.00146562

Table 3.96: Segment 5 north-east corner Z direction interstory drift ratio



(a)



(b)

Figure 3.16: Time histories of the water-tank segment force resultants in the global (a) X and Y, and (b) Z directions under the Takatori ground excitation scaled down by a factor of 0.32.

Time	Maximum	Time	Minimum
0.0050	-0.00000500	0.0350	-0.15915000
0.0650	0.21138000	0.1600	-3.83530000
0.1650	-3.81200000	0.2150	-6.82950000
0.2400	-6.23880000	0.2900	-9.00260000
0.3150	-7.99450000	0.4400	-15.70700000
0.4500	-15.60100000	0.5050	-18.20400000
0.5500	-16.72800000	0.5800	-17.95000000
0.6150	-16.09400000	0.6600	-19.01000000
0.6850	-17.19300000	0.7250	-21.78600000
0.7600	-20.34200000	0.7950	-23.44600000
0.8250	-20.84300000	0.8550	-22.22300000
0.9200	-20.19100000	0.9500	-22.16900000
0.9750	-20.55900000	1.1000	-35.28500000
1.1150	-35.17400000	1.1500	-38.23300000
1.1850	-34.35200000	1.1950	-34.42600000
1.7100	74.69500000	1.7450	71.00400000
1.7650	71.60500000	1.8800	53.45100000
1.9050	54.29900000	1.9350	51.74100000
1.9850	58.40100000	2.0000	58.06500000
2.5150	467.63000000	3.1700	-1375.20000000
3.7100	1861.50000000	4.3400	-1785.30000000
4.9800	1603.00000000	5.5450	-2274.90000000
6.1750	2546.20000000	6.3600	1499.70000000
6.3750	1538.20000000	6.9500	-2132.30000000
7.6750	1016.60000000	7.9550	316.40000000
8.0100	337.84000000	8.1600	228.94000000
8.3350	494.12000000	9.0450	-1229.50000000
9.6350	1088.60000000	9.6500	998.76000000
9.7100	1185.50000000	9.7250	1180.50000000
9.7800	1261.40000000	10.4500	-1168.70000000
11.0000	1206.80000000	11.7300	-1468.90000000
12.3500	1392.30000000	12.3750	1061.70000000
12.4000	1177.50000000	12.5800	455.34000000
12.6200	556.32000000	12.6600	472.96000000
12.6850	495.26000000	13.2050	-702.03000000
13.7800	618.48000000	13.8050	563.96000000
13.8400	607.75000000	14.0350	106.30000000
14.1550	180.63000000	14.3800	-102.00000000
14.4000	20.08100000	14.4650	-260.50000000
14.4800	-257.17000000	14.5550	-399.84000000
14.5650	-398.04000000	14.5700	-417.92000000
14.5750	-416.08000000	14.5950	-436.43000000
14.7200	-288.14000000	14.7300	-288.22000000
14.7450	-288.01000000	14.8400	-347.39000000
14.8450	-346.76000000	14.8600	-348.36000000
14.8850	-342.51000000	14.8900	-342.97000000
14.9500	-290.88000000	14.9750	-376.45000000
15.0000	-346.53000000	15.2100	-651.17000000
15.3300	-538.46000000	15.3350	-538.83000000
15.3950	-502.28000000	15.6500	-731.87000000
15.6750	-726.84000000	15.6800	-727.02000000
15.7300	-713.56000000	15.7350	-714.55000000
15.7850	-683.77000000	15.7900	-687.47000000
15.9000	-645.83000000	16.0000	-698.99000000

Table 3.97: Segment 1 member force resultant in X direction

Time	Maximum	Time	Minimum
0.0050	-0.00000080	0.0400	-0.12628000
0.0700	0.13825000	0.2200	-6.56830000
0.2400	-6.29890000	0.3000	-8.85260000
0.3200	-8.47990000	0.4450	-15.70000000
0.4500	-15.68400000	0.5150	-17.78900000
0.5550	-16.99200000	0.5800	-17.57700000
0.6150	-16.14000000	0.6650	-18.49800000
0.6900	-17.69100000	0.7300	-21.10400000
0.7550	-20.39000000	0.8000	-22.75400000
0.8300	-20.91600000	0.8550	-21.95900000
0.8800	-21.13200000	0.8950	-21.24800000
0.9250	-20.41000000	0.9500	-21.82400000
0.9800	-20.65600000	1.1100	-35.12100000
1.1200	-35.04900000	1.1550	-37.45100000
1.1850	-34.80600000	1.2000	-34.91600000
1.7100	74.02700000	1.7500	70.63100000
1.7650	70.94400000	1.8900	52.28300000
1.9100	52.87800000	1.9400	51.43100000
1.9850	55.23600000	2.0000	55.11800000
2.5100	464.94000000	3.1700	-1379.10000000
3.7100	1863.70000000	4.3400	-1793.80000000
4.9800	1606.60000000	5.5450	-2276.70000000
6.1800	2561.90000000	6.9500	-2136.10000000
7.6700	1017.70000000	7.9550	303.43000000
8.0200	322.91000000	8.1550	227.76000000
8.3350	489.98000000	9.0450	-1227.30000000
9.6450	1104.00000000	9.6600	1079.00000000
9.7800	1260.20000000	10.4500	-1171.90000000
11.0000	1210.10000000	11.7300	-1468.60000000
12.3550	1416.10000000	12.3800	1156.20000000
12.3950	1191.80000000	12.5900	529.20000000
12.6100	544.25000000	12.6600	480.57000000
12.6800	490.37000000	13.2050	-700.75000000
13.7800	638.79000000	13.7950	596.09000000
13.8400	634.11000000	14.0450	125.04000000
14.1550	176.72000000	14.3900	-122.45000000
14.4050	-71.89600000	14.5550	-402.45000000
14.5650	-401.31000000	14.5800	-453.86000000
14.7350	-288.24000000	14.8500	-346.19000000
14.9500	-261.98000000	14.9750	-325.30000000
14.9900	-318.65000000	15.2050	-610.58000000
15.3950	-471.55000000	15.6550	-687.94000000
15.6700	-687.32000000	15.6800	-687.83000000
15.9000	-587.53000000	15.9050	-587.77000000
15.9150	-587.40000000	16.0000	-634.69000000

Table 3.98: Segment 2 member force resultant in X direction

Time	Maximum	Time	Minimum
0.0150	0.00105420	0.0050	0.00000029
0.0750	0.05466100	0.0500	-0.10436000
0.5750	-17.03000000	0.5300	-17.58500000
0.6250	-16.30000000	0.5800	-17.03300000
0.6900	-18.37400000	0.6800	-18.39200000
0.8350	-21.21200000	0.8050	-21.98600000
0.8800	-20.84500000	0.8550	-21.40700000
0.9300	-20.63700000	0.9050	-21.14700000
0.9800	-20.95600000	0.9600	-21.33400000
1.7100	72.85800000	1.1600	-36.57500000
1.9250	51.84100000	1.8950	51.03700000
2.2950	288.00000000	1.9550	51.04900000
2.5050	461.12000000	2.3250	285.92000000
3.7150	1858.90000000	3.1700	-1379.90000000
4.9800	1608.00000000	4.3350	-1792.50000000
6.1800	2564.30000000	5.5400	-2273.10000000
7.6700	1013.00000000	6.9500	-2129.40000000
8.0300	310.10000000	7.9650	292.07000000
8.3350	486.59000000	8.1550	227.37000000
9.6500	1116.00000000	9.0450	-1222.60000000
9.7800	1249.70000000	9.6650	1104.70000000
11.0000	1207.80000000	10.4500	-1172.50000000
12.3550	1417.00000000	11.7300	-1464.70000000
13.7850	641.38000000	13.2050	-698.80000000
13.8150	625.42000000	13.7950	604.43000000
13.8450	629.28000000	13.8200	625.09000000
14.1550	175.26000000	14.0500	121.27000000
14.4100	-118.85000000	14.3950	-141.64000000
14.7300	-286.77000000	14.5850	-458.45000000
14.9500	-261.22000000	14.8550	-342.18000000
15.3950	-472.15000000	15.2050	-604.55000000
15.6750	-686.55000000	15.6550	-687.18000000
15.9000	-585.42000000	15.6850	-687.35000000
15.9200	-586.40000000	15.9100	-586.55000000

Table 3.99: Segment 3 member force resultant in X direction

Time	Maximum	Time	Minimum
0.0150	0.00126150	0.0050	0.00000195
0.0850	0.04450700	0.0600	-0.11822000
0.3400	-9.63970000	0.3300	-9.69360000
0.5850	-16.48000000	0.5400	-17.71300000
0.6400	-16.15100000	0.6050	-16.66300000
0.7150	-18.54900000	0.6900	-18.99900000
0.7850	-20.62700000	0.7650	-20.86800000
0.8650	-20.67700000	0.8200	-21.84800000
0.9450	-20.45500000	0.9150	-21.15200000
0.9950	-21.14300000	0.9800	-21.37200000
1.1400	-34.75000000	1.1250	-34.79200000
1.6900	71.83800000	1.1750	-36.52800000
1.7250	71.60600000	1.7100	71.50100000
1.7850	69.14400000	1.7750	69.06800000
1.9350	51.45300000	1.9000	49.91600000
2.2850	289.26000000	1.9750	48.70000000
2.5000	457.00000000	2.3250	283.57000000
3.7200	1846.00000000	3.1700	-1376.40000000
4.9800	1605.40000000	4.3300	-1787.10000000
6.1800	2559.20000000	5.5400	-2264.90000000
7.6700	1006.10000000	6.9500	-2116.90000000
8.0350	298.96000000	7.9700	281.85000000
8.3350	481.36000000	8.1500	227.50000000
9.6600	1131.00000000	9.0450	-1214.70000000
9.7750	1236.50000000	9.6850	1108.30000000
11.0000	1202.00000000	10.4500	-1169.40000000
12.3550	1413.20000000	11.7350	-1457.60000000
12.4250	1094.00000000	12.4050	1085.30000000
12.6550	507.52000000	12.6200	472.67000000
13.7850	644.98000000	13.2100	-695.30000000
13.8050	614.45000000	13.8000	614.24000000
13.8450	625.44000000	13.8150	612.64000000
14.1650	173.20000000	14.0500	115.88000000
14.4350	-154.15000000	14.4100	-174.89000000
14.7300	-285.06000000	14.5900	-455.91000000
14.9550	-258.22000000	14.8550	-335.63000000
15.3950	-471.03000000	15.2050	-597.96000000
15.6750	-684.08000000	15.6550	-684.89000000
15.9000	-581.52000000	15.6850	-684.60000000

Table 3.100: Segment 4 member force resultant in X direction

Time	Maximum	Time	Minimum
0.0150	0.00126720	0.0050	0.00000426
0.0300	-0.00026945	0.0250	-0.00031323
0.0950	0.14242000	0.0650	-0.16200000
0.2050	-4.85330000	0.1850	-5.03610000
0.2650	-6.91460000	0.2500	-6.96340000
0.3500	-9.45380000	0.3250	-9.98530000
0.4900	-15.99900000	0.4700	-16.20700000
0.5850	-16.08400000	0.5450	-17.71300000
0.6450	-15.85700000	0.6100	-16.71400000
0.7200	-17.91600000	0.6900	-19.25200000
0.7900	-20.09700000	0.7600	-20.84400000
0.8600	-20.14600000	0.8250	-21.98400000
0.8900	-20.62300000	0.8850	-20.63100000
0.9500	-20.01200000	0.9200	-21.18200000
1.0050	-20.67200000	0.9800	-21.55300000
1.1450	-34.06000000	1.1250	-34.52300000
1.6850	71.43200000	1.1800	-36.77300000
1.7350	71.01200000	1.7100	70.28600000
1.7950	69.07800000	1.7750	68.23700000
1.9350	51.00900000	1.9000	49.10300000
2.2850	288.53000000	1.9800	46.71600000
2.5000	451.82000000	2.3300	281.20000000
3.7250	1829.20000000	3.1700	-1367.20000000
4.9800	1596.50000000	4.3200	-1775.50000000
6.1800	2541.30000000	5.5400	-2245.90000000
7.6650	996.94000000	6.9450	-2098.50000000
8.0350	290.03000000	7.9800	273.31000000
8.3350	474.84000000	8.1500	227.15000000
9.6650	1137.10000000	9.0450	-1203.20000000
9.7550	1223.90000000	9.6900	1085.80000000
11.0050	1192.30000000	10.4500	-1161.80000000
12.3550	1403.10000000	11.7350	-1446.00000000
12.4300	1088.40000000	12.3950	1058.30000000
12.6550	510.56000000	12.6150	447.89000000
13.7900	644.51000000	13.2200	-690.09000000
13.8400	620.86000000	13.8150	597.44000000
14.1700	170.99000000	14.0500	111.83000000
14.4350	-135.35000000	14.4100	-213.45000000
14.7300	-283.35000000	14.5950	-464.56000000
14.9550	-252.99000000	14.8650	-330.22000000
15.0050	-338.82000000	14.9950	-339.62000000
15.4000	-467.65000000	15.2000	-590.81000000
15.6800	-679.15000000	15.6550	-680.26000000
15.9000	-576.01000000	15.6900	-679.55000000

Table 3.101: Segment 5 member force resultant in X direction

Time	Maximum	Time	Minimum
0.0200	0.00197380	0.0050	0.00013797
0.0750	1.17970000	0.0400	-0.09641200
0.1500	1.72200000	0.1100	0.39072000
0.2450	3.09310000	0.1700	1.59040000
0.3950	7.11350000	0.2600	3.04340000
0.5700	11.73600000	0.4000	7.10690000
0.7100	13.80000000	0.6100	11.27600000
0.7700	16.44000000	0.7200	13.77000000
0.8350	15.56200000	0.8050	14.60400000
1.0250	35.53700000	0.8550	14.90300000
1.0850	34.66200000	1.0650	34.45400000
1.4000	-7.70370000	1.3750	-9.05470000
1.7350	-29.92900000	1.5800	-60.24600000
1.9950	-9.83450000	1.8500	-42.52300000
2.3200	-20.28900000	2.1950	-131.18000000
2.6200	177.35000000	2.4550	-198.08000000
2.9300	492.71000000	2.7350	103.98000000
3.1650	221.91000000	3.0900	160.15000000
3.5600	-600.58000000	3.5350	-613.31000000
4.1050	794.47000000	3.5700	-603.29000000
5.2550	836.66000000	4.7950	-679.23000000
6.3350	403.17000000	5.9150	-1208.00000000
6.3450	320.28000000	6.3400	307.40000000
6.6400	1290.20000000	6.3600	307.12000000
7.9300	1200.60000000	7.2500	-1117.00000000
9.3950	651.47000000	8.6250	-1010.40000000
10.2500	79.20900000	10.0950	-23.75000000
10.4800	63.46900000	10.3750	33.90600000
11.6600	334.48000000	10.9500	-403.14000000
12.3800	94.95900000	12.3100	-281.42000000
12.4350	125.70000000	12.4000	11.04100000
12.4700	119.84000000	12.4500	111.34000000
12.5250	114.45000000	12.4950	107.86000000
12.5750	112.03000000	12.5500	106.43000000
12.6450	158.49000000	12.5900	106.64000000
12.7100	195.93000000	12.6600	157.16000000
12.7600	192.19000000	12.7400	190.29000000
13.7800	470.78000000	13.2550	-260.20000000
13.8300	467.85000000	13.7900	370.11000000
13.9050	516.27000000	13.8550	457.26000000
14.0250	403.90000000	14.0200	403.26000000
14.4050	-310.94000000	14.3800	-416.76000000
14.4150	-317.26000000	14.4100	-317.52000000
14.5750	-458.13000000	14.5650	-559.48000000
14.5850	-464.71000000	14.5800	-465.54000000
14.6550	-551.09000000	14.6200	-571.76000000
14.9650	-162.07000000	14.6850	-558.42000000
15.0000	-186.94000000	14.9850	-198.97000000
15.2500	232.07000000	15.0050	-195.15000000
15.4200	427.88000000	15.2550	230.89000000
15.4650	443.31000000	15.4250	421.44000000
15.4950	471.89000000	15.4700	437.52000000
15.5700	471.47000000	15.5250	469.42000000
15.6750	443.57000000	15.6700	440.11000000
15.7350	407.54000000	15.7300	407.39000000
15.8200	350.53000000	15.8150	350.25000000
15.9700	252.05000000	15.9650	249.10000000

Table 3.102: Segment 1 member force resultant in Y direction

Time	Maximum	Time	Minimum
0.0200	0.00052960	0.0050	-0.00016045
0.0850	1.02780000	0.0400	-0.06471000
0.1500	1.53940000	0.1100	0.68683000
0.5700	11.65800000	0.1700	1.41930000
0.7700	16.12700000	0.6200	11.33700000
0.8350	15.08500000	0.8100	14.76800000
1.0300	35.53400000	0.8600	14.42900000
1.0850	34.47800000	1.0750	34.46600000
1.4050	-9.03980000	1.3800	-9.69230000
1.7450	-30.39000000	1.5850	-59.65000000
1.9950	-8.86970000	1.8550	-40.53200000
2.3300	-15.50300000	2.2000	-131.54000000
2.6250	169.29000000	2.4550	-201.82000000
2.9300	483.06000000	2.7300	115.25000000
3.1650	229.62000000	3.0900	170.94000000
3.5600	-609.07000000	3.5350	-615.31000000
4.1050	797.48000000	3.5700	-609.96000000
5.2600	839.62000000	4.7950	-682.20000000
6.3350	372.77000000	5.9150	-1210.90000000
6.6400	1286.70000000	6.3500	222.71000000
7.9300	1200.80000000	7.2500	-1128.60000000
9.3950	653.87000000	8.6200	-1007.60000000
10.2550	75.35700000	10.1000	-27.84500000
10.4800	64.51400000	10.3750	34.81000000
11.6600	334.73000000	10.9450	-400.09000000
12.3750	37.19300000	12.3200	-283.98000000
12.4350	95.40400000	12.3900	12.20200000
12.4650	92.00600000	12.4550	80.71300000
12.4950	92.70800000	12.4800	88.98200000
12.5200	96.93100000	12.5000	90.85000000
12.7150	196.64000000	12.5500	90.43600000
12.7550	194.36000000	12.7450	194.23000000
13.7800	470.52000000	13.2550	-261.26000000
13.8300	451.71000000	13.7950	387.98000000
13.9050	496.41000000	13.8450	446.40000000
14.3900	-363.73000000	14.3750	-392.47000000
14.4200	-346.95000000	14.3950	-364.55000000
14.5850	-507.71000000	14.5650	-568.26000000
14.6450	-562.23000000	14.6200	-568.08000000
14.9500	-223.99000000	14.6800	-571.17000000
14.9800	-204.01000000	14.9600	-247.96000000
15.4300	396.05000000	14.9900	-205.65000000
15.5050	429.51000000	15.4350	395.93000000
15.5500	427.58000000	15.5350	427.30000000

Table 3.103: Segment 2 member force resultant in Y direction

Time	Maximum	Time	Minimum
0.0250	0.00020316	0.0050	-0.00014360
0.1050	1.06980000	0.0450	-0.04023100
0.5800	11.53200000	0.1150	1.06740000
0.7800	15.76300000	0.6500	11.19500000
1.0350	35.49800000	0.8600	14.13300000
1.7500	-30.73400000	1.5950	-58.99500000
2.0000	-8.42150000	1.8600	-38.57400000
2.3400	-8.94630000	2.2100	-132.09000000
2.6300	160.39000000	2.4600	-202.84000000
2.9300	470.65000000	2.7150	124.63000000
3.1600	235.31000000	3.0850	180.75000000
4.1050	797.31000000	3.5350	-614.10000000
5.2600	839.72000000	4.8000	-682.15000000
6.3350	361.57000000	5.9150	-1211.00000000
6.6350	1288.40000000	6.3500	222.55000000
7.9300	1197.30000000	7.2500	-1137.30000000
9.4000	652.02000000	8.6200	-1001.10000000
10.2600	73.16500000	10.1000	-29.58800000
10.4800	64.76800000	10.3800	37.23300000
11.6600	334.46000000	10.9450	-395.17000000
12.3750	30.78800000	12.3250	-285.00000000
12.4050	75.48200000	12.3850	23.71800000
12.4450	74.04100000	12.4200	68.21200000
12.4700	97.41700000	12.4500	73.13800000
12.4950	98.96500000	12.4800	94.77600000
12.5200	93.59400000	12.5100	92.15100000
12.5450	95.79700000	12.5300	93.45100000
12.7350	196.62000000	12.5550	93.93200000
13.7800	470.20000000	13.2600	-261.24000000
13.9100	490.22000000	13.8000	404.95000000
14.3900	-352.54000000	14.3750	-390.10000000
14.4200	-344.99000000	14.4000	-371.01000000
14.5850	-525.91000000	14.5650	-565.68000000
14.9500	-223.19000000	14.6700	-572.86000000
15.5150	426.91000000	14.9650	-260.14000000
15.5450	426.41000000	15.5300	426.30000000

Table 3.104: Segment 3 member force resultant in Y direction

Time	Maximum	Time	Minimum
0.0300	0.00016437	0.0050	-0.00012286
0.1100	1.40080000	0.0550	-0.03810500
0.5950	11.54800000	0.1450	0.99361000
0.7950	15.70000000	0.6550	11.02700000
1.0400	35.39300000	0.8450	13.84100000
1.1100	33.96600000	1.0950	33.88000000
1.7600	-30.76600000	1.6000	-58.53900000
2.0000	-8.49140000	1.8600	-36.75600000
2.3400	-4.34740000	2.2150	-132.38000000
2.6350	152.44000000	2.4600	-200.78000000
2.9350	457.25000000	2.7050	130.69000000
3.1600	237.98000000	3.0850	189.85000000
4.1050	793.98000000	3.5400	-614.16000000
5.2600	836.47000000	4.8000	-678.86000000
6.3400	357.75000000	5.9200	-1206.00000000
6.6350	1285.00000000	6.3550	237.96000000
7.9350	1191.60000000	7.2500	-1141.10000000
9.4000	648.44000000	8.6200	-992.43000000
10.2650	70.96800000	10.1000	-30.06500000
10.4750	64.49200000	10.3850	39.68800000
11.6600	333.11000000	10.9450	-390.24000000
12.4000	105.82000000	12.3300	-285.05000000
12.4800	105.39000000	12.4350	50.56200000
12.5500	98.97400000	12.5150	88.07700000
12.7400	197.77000000	12.5550	98.25800000
13.7850	469.33000000	13.2600	-260.40000000
13.9200	484.73000000	13.8150	402.68000000
14.3950	-355.43000000	14.3800	-391.45000000
14.4250	-351.28000000	14.4050	-362.84000000
14.6050	-520.23000000	14.5700	-566.08000000
14.9550	-219.05000000	14.6600	-575.77000000
15.5350	424.96000000	14.9700	-255.67000000

Table 3.105: Segment 4 member force resultant in Y direction

Time	Maximum	Time	Minimum
0.0050	-0.00010095	0.0150	-0.00010144
0.0400	0.00180590	0.0650	-0.06918800
0.1100	1.57050000	0.1450	0.82482000
0.2800	3.64870000	0.2900	3.64800000
0.5450	11.05000000	0.5600	10.98500000
0.6000	11.51100000	0.6550	10.88900000
0.7450	14.55100000	0.7600	14.44600000
0.7950	15.68000000	0.8450	13.47300000
1.0450	35.15300000	1.0950	33.60600000
1.1200	34.09500000	1.3550	-9.25870000
1.3600	-9.25330000	1.4100	-12.74900000
1.4300	-12.27900000	1.6050	-58.06100000
1.7650	-30.66700000	1.8600	-35.29700000
2.0050	-8.73910000	2.2200	-131.85000000
2.3450	-2.99720000	2.4600	-196.48000000
2.6400	146.76000000	2.7000	133.42000000
2.9350	445.16000000	3.0850	195.98000000
3.1600	237.31000000	3.5400	-612.47000000
4.1050	787.35000000	4.8000	-672.34000000
5.2600	829.58000000	5.9200	-1197.00000000
6.3400	356.44000000	6.3650	213.67000000
6.6300	1276.20000000	7.2500	-1137.70000000
7.9350	1182.30000000	8.6200	-981.65000000
9.4000	642.84000000	10.1050	-29.72600000
10.2650	68.95900000	10.3850	41.45400000
10.4700	63.91700000	10.9450	-385.17000000
11.6600	330.38000000	12.3300	-283.69000000
12.3950	132.68000000	12.4350	37.12100000
12.4800	113.04000000	12.5200	84.51600000
12.5500	101.57000000	12.5650	99.58700000
12.6150	130.65000000	12.6200	130.43000000
12.7400	197.34000000	13.2600	-258.51000000
13.7850	468.97000000	13.8200	384.84000000
13.9250	480.38000000	14.3800	-390.68000000
14.4050	-345.38000000	14.4200	-360.61000000
14.4400	-346.73000000	14.5700	-562.89000000
14.6100	-508.79000000	14.6600	-574.70000000
14.9550	-215.14000000	14.9800	-261.07000000
15.5350	422.36000000	16.0000	152.58000000

Table 3.106: Segment 5 member force resultant in Y direction

Table 3.107: Segment 1 member force resultant in Z direction

Time	Maximum	Time	Minimum
0.0050	6248.00000000	0.1100	6222.80000000
0.2150	6329.20000000	0.3550	6116.80000000
0.5000	6332.60000000	0.6600	6220.50000000
0.7400	6325.80000000	0.8700	6145.80000000
1.0000	6333.40000000	1.1100	6257.30000000
1.2150	6384.20000000	1.3250	6060.80000000
1.4350	6215.40000000	1.5600	6113.20000000
1.6450	6276.20000000	1.6800	6267.30000000
1.7350	6302.20000000	1.8150	6191.50000000
1.9400	6369.90000000	2.0800	6076.80000000
2.3000	6499.30000000	2.4300	6059.90000000
2.5500	6315.30000000	2.6250	6097.20000000
2.7500	6391.50000000	2.8450	6126.90000000
3.0050	6499.40000000	3.2050	6019.10000000
3.3850	6308.20000000	3.4450	6246.00000000
3.4750	6261.50000000	3.6050	5600.70000000
3.6600	5846.80000000	3.6650	5845.60000000
3.8100	6849.50000000	3.9750	5744.70000000
4.1400	6821.80000000	4.3100	5720.70000000
4.4550	6795.40000000	4.6400	5926.90000000
4.7800	6518.40000000	4.9400	5863.20000000
5.0650	6844.80000000	5.2200	5710.40000000
5.3400	6544.00000000	5.5050	5561.20000000
5.6850	7267.40000000	5.8350	4989.10000000
6.0350	6621.30000000	6.1600	5409.20000000
6.3300	7252.90000000	6.3400	6041.20000000
6.4500	6955.70000000	6.6300	5659.10000000
6.8300	6981.30000000	7.0050	5530.60000000
7.1850	6945.60000000	7.3600	5476.60000000
7.5500	6628.50000000	7.7150	5840.40000000
7.8850	6604.40000000	7.8900	6537.20000000
7.9100	6616.10000000	8.0650	5818.60000000
8.2250	6730.20000000	8.4050	5895.70000000
8.5850	6815.70000000	8.7600	5818.30000000
8.9350	6540.20000000	9.1500	6024.90000000
9.3100	6199.10000000	9.3750	6113.30000000
9.4400	6226.10000000	9.5000	6174.50000000
9.5900	6228.20000000	9.5950	6164.10000000
9.6350	6250.30000000	9.6500	6228.10000000
9.6550	6230.80000000	9.6800	6214.00000000
9.8400	6564.70000000	10.0250	6240.90000000
10.0800	6260.10000000	10.1950	6060.20000000
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Table 3.107 – Continued from previous page

Time	Maximum	Time	Minimum
10.3150	6217.50000000	10.3250	6217.00000000
10.4050	6261.60000000	10.5300	6180.50000000
10.5900	6233.00000000	10.6500	6174.70000000
10.7600	6271.00000000	10.8950	6069.20000000
11.0900	6543.80000000	11.2350	5990.10000000
11.4100	6529.90000000	11.5650	6074.30000000
11.7200	6615.00000000	11.8800	6003.60000000
12.0600	6515.20000000	12.2050	5908.90000000
12.3200	6259.40000000	12.3600	4866.50000000
12.3650	5060.90000000	12.3700	5033.70000000
12.3800	5190.90000000	12.3950	5146.30000000
12.4500	5588.50000000	12.4600	5562.00000000
12.6150	6970.60000000	12.7700	5696.30000000
12.9300	6920.90000000	13.0950	5567.10000000
13.2800	6721.50000000	13.4600	5730.30000000
13.6500	6713.50000000	13.7900	5268.20000000
13.8000	5319.80000000	13.8150	5259.20000000
13.9950	6941.40000000	14.0000	6934.10000000
14.0050	6957.50000000	14.0100	6938.40000000
14.0200	6978.40000000	14.0250	6945.80000000
14.0400	6965.00000000	14.2400	5734.80000000
14.3750	6437.60000000	14.3800	6045.20000000
14.4000	6212.90000000	14.4100	6156.10000000
14.5150	6494.20000000	14.5750	6005.20000000
14.5800	6021.60000000	14.6500	5816.10000000
14.8350	6201.00000000	14.8450	6140.50000000
14.8550	6144.90000000	14.9650	5442.60000000
14.9700	5464.90000000	14.9850	5445.10000000
15.0000	5466.50000000	15.0050	5450.90000000
15.0500	5681.60000000	15.0550	5678.90000000
15.0700	5763.20000000	15.0750	5759.60000000
15.1100	5962.40000000	15.1150	5961.10000000
15.2000	6255.00000000	15.4250	5408.40000000
15.4650	5438.60000000	15.4700	5403.90000000
15.4850	5451.00000000	15.4900	5447.10000000
15.6400	5956.10000000	15.8700	5172.00000000
15.8950	5188.40000000	15.9000	5180.90000000

Table 3.108: Segment 2 member force resultant in Z direction

Time	Maximum	Time	Minimum
0.0050	6176.00000000	0.1150	6150.00000000
0.2150	6257.90000000	0.3500	6045.40000000
0.5000	6259.90000000	0.6600	6147.30000000
0.7400	6255.50000000	0.8700	6073.90000000
1.0000	6262.40000000	1.1100	6183.70000000
1.2200	6312.00000000	1.3250	5988.00000000
1.4350	6146.40000000	1.5600	6040.50000000
1.6400	6206.00000000	1.6800	6194.50000000
1.7350	6232.00000000	1.8150	6119.10000000
1.9400	6299.30000000	2.0800	6004.20000000
2.2650	6420.10000000	2.2750	6419.80000000
2.3000	6424.80000000	2.4300	5985.90000000
2.5500	6246.80000000	2.6250	6022.50000000
2.7550	6320.20000000	2.8450	6051.80000000
3.0150	6445.60000000	3.2050	5946.70000000
3.3850	6237.20000000	3.4450	6171.10000000
3.4750	6191.00000000	3.6050	5503.50000000
3.8100	6765.40000000	3.9750	5670.80000000
4.1450	6757.00000000	4.3150	5722.90000000
4.4550	6724.10000000	4.6450	5857.30000000
4.7800	6445.90000000	4.9400	5790.20000000
5.0650	6770.60000000	5.2200	5638.20000000
5.3350	6465.80000000	5.4950	5516.10000000
5.6800	7195.60000000	5.8350	4920.50000000
6.0350	6589.00000000	6.1550	5474.10000000
6.3350	7321.00000000	6.3700	6514.40000000
6.4500	6880.10000000	6.6300	5519.70000000
6.8350	6836.90000000	7.0050	5434.40000000
7.1850	6875.30000000	7.3600	5444.50000000
7.5500	6608.90000000	7.7150	5804.70000000
7.8850	6545.30000000	7.8950	6535.20000000
7.9050	6545.00000000	8.0650	5744.70000000
8.2250	6643.30000000	8.4000	5796.60000000
8.5800	6717.60000000	8.7600	5718.80000000
8.9350	6466.10000000	9.1500	5963.90000000
9.3100	6170.10000000	9.3700	6085.10000000
9.4400	6208.30000000	9.4950	6149.00000000
9.5400	6164.00000000	9.5500	6163.60000000
9.5900	6198.30000000	9.6000	6185.70000000
9.6450	6236.50000000	9.6900	6216.70000000
9.8350	6489.00000000	10.0250	6131.30000000
10.0750	6147.80000000	10.1900	5948.20000000
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Table 3.108 – Continued from previous page

Time	Maximum	Time	Minimum
10.4050	6182.00000000	10.5300	6111.80000000
10.5900	6171.90000000	10.6450	6124.90000000
10.7600	6232.50000000	10.8950	6042.80000000
11.0900	6469.40000000	11.2400	5905.90000000
11.4100	6433.10000000	11.5600	5972.40000000
11.7200	6530.00000000	11.8800	5934.40000000
12.0600	6473.20000000	12.2050	5876.90000000
12.3250	6259.20000000	12.3900	5291.40000000
12.5900	6985.30000000	12.7650	5593.00000000
12.9250	6796.70000000	13.0900	5444.80000000
13.2800	6648.20000000	13.4550	5693.50000000
13.6500	6725.30000000	13.8150	5333.10000000
14.0050	7034.90000000	14.2350	5668.90000000
14.3750	6429.30000000	14.3900	6315.60000000
14.3950	6319.30000000	14.4150	6253.90000000
14.5150	6466.50000000	14.6450	5789.50000000
14.8350	6241.80000000	14.9900	5598.80000000
15.2000	6446.50000000	15.4300	5721.40000000
15.6350	6391.40000000	15.8500	5734.30000000

Table 3.109: Segment 3 member force resultant in Z direction

Time	Maximum	Time	Minimum
0.0050	6104.00000000	0.1150	6077.20000000
0.2150	6186.20000000	0.3500	5974.20000000
0.5000	6187.20000000	0.6600	6074.50000000
0.7400	6184.50000000	0.8700	6002.20000000
1.0000	6190.90000000	1.1100	6110.40000000
1.2200	6239.90000000	1.3250	5916.10000000
1.4350	6076.80000000	1.4900	6028.30000000
1.5000	6029.30000000	1.5650	5968.20000000
1.6400	6135.50000000	1.6850	6121.80000000
1.7350	6161.10000000	1.8150	6047.00000000
1.9400	6228.10000000	2.0850	5932.30000000
2.2650	6347.00000000	2.2800	6344.30000000
2.3050	6350.50000000	2.4300	5913.00000000
2.5500	6177.20000000	2.6250	5948.90000000
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Table 3.109 – Continued from previous page

Time	Maximum	Time	Minimum
2.7550	6248.40000000	2.8450	5977.70000000
3.0150	6373.40000000	3.2050	5875.20000000
3.3850	6165.80000000	3.4450	6096.80000000
3.4800	6120.40000000	3.6100	5487.70000000
3.8100	6701.20000000	3.9750	5598.90000000
4.1450	6683.60000000	4.3200	5652.70000000
4.4550	6651.30000000	4.6450	5788.00000000
4.7800	6372.60000000	4.9400	5718.90000000
5.0650	6699.80000000	5.2200	5567.70000000
5.3400	6418.10000000	5.5050	5508.40000000
5.6800	7111.40000000	5.8350	4853.90000000
6.0400	6530.80000000	6.1600	5419.70000000
6.3350	7270.30000000	6.3650	6430.70000000
6.4500	6805.70000000	6.6300	5496.20000000
6.8350	6759.10000000	7.0000	5367.00000000
7.1850	6799.90000000	7.3600	5376.70000000
7.5500	6536.70000000	7.7150	5733.80000000
7.8900	6477.30000000	7.9000	6462.80000000
7.9050	6463.70000000	8.0650	5674.50000000
8.2250	6567.00000000	8.4000	5726.30000000
8.5800	6642.20000000	8.7600	5648.90000000
8.9350	6394.20000000	9.1500	5891.80000000
9.3100	6099.60000000	9.3750	6011.50000000
9.4400	6138.60000000	9.4950	6076.20000000
9.5400	6093.20000000	9.5550	6092.00000000
9.5950	6128.90000000	9.6050	6120.00000000
9.6450	6167.90000000	9.6900	6142.70000000
9.8350	6416.90000000	10.0250	6059.40000000
10.0800	6076.80000000	10.1900	5876.70000000
10.3150	6052.10000000	10.3250	6051.50000000
10.4050	6110.60000000	10.5300	6039.50000000
10.5950	6101.90000000	10.6450	6051.90000000
10.7600	6160.60000000	10.8950	5973.10000000
11.0900	6396.00000000	11.2400	5835.20000000
11.4100	6360.70000000	11.5600	5900.20000000
11.7200	6456.20000000	11.8800	5862.90000000
12.0600	6400.50000000	12.2050	5805.90000000
12.3300	6192.10000000	12.3850	5220.40000000
12.5900	6907.20000000	12.7650	5523.60000000
12.9250	6722.30000000	13.0900	5376.80000000
13.2800	6573.10000000	13.4550	5625.10000000
13.6500	6650.00000000	13.8150	5267.80000000
14.0050	6960.00000000	14.2350	5599.70000000
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Table 3.109 – Continued from previous page

Time	Maximum	Time	Minimum
14.3750	6356.20000000	14.4200	6180.50000000
14.5150	6393.20000000	14.6450	5720.70000000
14.8350	6170.10000000	14.9850	5531.20000000
15.1950	6372.70000000	15.4350	5652.40000000
15.6350	6317.80000000	15.8500	5664.80000000

Table 3.110: Segment 4 member force resultant in Z direction

Time	Maximum	Time	Minimum
0.0050	6032.00000000	0.1150	6004.80000000
0.2150	6114.00000000	0.3500	5903.20000000
0.5000	6114.30000000	0.5750	6069.60000000
0.5850	6069.70000000	0.6600	6002.10000000
0.7400	6112.90000000	0.8700	5930.90000000
1.0000	6118.90000000	1.1100	6037.50000000
1.2200	6167.30000000	1.3250	5844.80000000
1.4350	6006.50000000	1.4900	5956.20000000
1.5050	5958.40000000	1.5650	5896.40000000
1.6400	6064.50000000	1.6850	6049.20000000
1.7350	6089.60000000	1.8150	5975.20000000
1.9400	6156.10000000	2.0850	5861.10000000
2.2600	6273.40000000	2.2800	6268.90000000
2.3050	6276.20000000	2.4300	5841.00000000
2.5500	6106.60000000	2.6250	5876.40000000
2.7550	6175.90000000	2.8450	5904.70000000
3.0150	6300.00000000	3.2050	5804.60000000
3.3850	6094.10000000	3.4450	6023.10000000
3.4800	6049.00000000	3.6100	5419.00000000
3.8100	6624.30000000	3.9750	5529.10000000
4.1450	6608.70000000	4.3200	5582.10000000
4.4550	6576.90000000	4.6450	5719.10000000
4.7800	6297.30000000	4.9400	5648.90000000
5.0650	6624.80000000	5.2200	5498.90000000
5.3450	6350.00000000	5.5050	5441.20000000
5.6800	7044.50000000	5.8350	4790.40000000
6.0400	6482.50000000	6.1550	5405.80000000
6.3350	7192.40000000	6.3600	6305.10000000
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Table 3.110 – Continued from previous page

Time	Maximum	Time	Minimum
6.4500	6727.60000000	6.6300	5437.10000000
6.8300	6688.70000000	7.0000	5301.50000000
7.1850	6722.90000000	7.3600	5310.70000000
7.5500	6462.20000000	7.7150	5663.50000000
7.8900	6405.40000000	7.9050	6382.90000000
7.9150	6386.30000000	8.0650	5605.60000000
8.2200	6490.70000000	8.4000	5657.20000000
8.5800	6566.00000000	8.7600	5580.40000000
8.9350	6321.00000000	9.1500	5820.40000000
9.2350	5980.20000000	9.2450	5980.00000000
9.3100	6028.30000000	9.3750	5938.20000000
9.4400	6067.40000000	9.4950	6002.90000000
9.5400	6021.20000000	9.5550	6019.30000000
9.5950	6058.10000000	9.6100	6048.00000000
9.6450	6095.80000000	9.6900	6069.30000000
9.8350	6344.00000000	10.0200	5988.20000000
10.0800	6006.10000000	10.1900	5806.20000000
10.3100	5981.20000000	10.3300	5979.80000000
10.4050	6039.10000000	10.5300	5967.60000000
10.5950	6031.30000000	10.6450	5979.20000000
10.7600	6087.90000000	10.8950	5901.60000000
11.0900	6322.10000000	11.2400	5765.60000000
11.4100	6287.70000000	11.5600	5829.00000000
11.7200	6381.70000000	11.8800	5792.20000000
12.0600	6326.60000000	12.2050	5735.10000000
12.3300	6121.60000000	12.3800	5120.80000000
12.5900	6828.00000000	12.7650	5456.00000000
12.9250	6646.90000000	13.0900	5310.70000000
13.2800	6497.20000000	13.4550	5557.10000000
13.6500	6572.60000000	13.8100	5204.10000000
14.0050	6883.20000000	14.2350	5531.80000000
14.3800	6293.00000000	14.4000	6117.80000000
14.4100	6128.30000000	14.4250	6099.90000000
14.5150	6319.30000000	14.6450	5652.70000000
14.8350	6097.80000000	14.9800	5462.70000000
15.1950	6298.40000000	15.4350	5583.40000000
15.6350	6243.90000000	15.8500	5596.00000000

Table 3.111: Segment 5 member force resultant in Z direction

Time	Maximum	Time	Minimum
0.0050	5960.00000000	0.1150	5932.80000000
0.2150	6041.50000000	0.3500	5832.40000000
0.5000	6041.30000000	0.5750	5996.90000000
0.5850	5997.20000000	0.6600	5930.00000000
0.7400	6040.70000000	0.8700	5859.80000000
1.0000	6046.40000000	1.1100	5965.00000000
1.2200	6094.20000000	1.3250	5774.40000000
1.4350	5935.50000000	1.4850	5884.50000000
1.5050	5887.50000000	1.5650	5825.20000000
1.6350	5993.00000000	1.6850	5976.80000000
1.7350	6017.50000000	1.8150	5903.60000000
1.9400	6083.40000000	2.0850	5790.50000000
2.2600	6199.60000000	2.2850	6193.60000000
2.3050	6201.50000000	2.4300	5770.10000000
2.5500	6034.80000000	2.6250	5805.00000000
2.7550	6102.70000000	2.8450	5832.90000000
3.0150	6225.30000000	3.2050	5734.70000000
3.3900	6022.10000000	3.4450	5950.00000000
3.4800	5977.10000000	3.6100	5352.00000000
3.8100	6546.50000000	3.9750	5461.30000000
4.1450	6531.40000000	4.3200	5513.60000000
4.4550	6500.70000000	4.6450	5650.40000000
4.7800	6221.70000000	4.9400	5580.10000000
5.0650	6548.30000000	5.2200	5431.70000000
5.3450	6278.10000000	5.5050	5373.20000000
5.6800	6963.40000000	5.8350	4730.20000000
6.0400	6405.00000000	6.1550	5338.70000000
6.3350	7111.00000000	6.3600	6189.30000000
6.4500	6647.90000000	6.6300	5371.90000000
6.8300	6609.40000000	7.0000	5237.20000000
7.1850	6644.30000000	7.3600	5246.10000000
7.5500	6386.30000000	7.7150	5594.40000000
7.8900	6331.20000000	7.9050	6304.80000000
7.9150	6310.80000000	8.0650	5537.80000000
8.2200	6413.90000000	8.4000	5588.60000000
8.5800	6489.00000000	8.7600	5512.90000000
8.9350	6246.80000000	9.1500	5749.90000000
9.2350	5908.90000000	9.2450	5908.40000000
9.3100	5956.60000000	9.3750	5865.90000000
9.4400	5995.40000000	9.4950	5930.20000000
9.5400	5949.10000000	9.5550	5946.80000000
9.5950	5986.10000000	9.6100	5973.20000000
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Table 3.111 – Continued from previous page

Time	Maximum	Time	Minimum
9.6450	6023.10000000	9.6900	5996.30000000
9.8350	6269.80000000	10.0200	5917.30000000
10.0800	5935.20000000	10.1900	5736.30000000
10.3100	5910.00000000	10.3300	5908.10000000
10.4050	5967.30000000	10.5300	5896.00000000
10.5950	5960.00000000	10.6500	5907.00000000
10.7600	6014.90000000	10.8950	5830.50000000
11.0900	6247.50000000	11.2400	5696.60000000
11.4100	6213.90000000	11.5600	5758.50000000
11.7200	6306.30000000	11.8800	5722.30000000
12.0600	6251.90000000	12.2050	5665.00000000
12.3300	6049.50000000	12.3800	5021.00000000
12.5900	6747.40000000	12.7650	5389.50000000
12.9250	6569.90000000	13.0900	5245.90000000
13.2800	6420.50000000	13.4550	5489.80000000
13.6500	6494.20000000	13.8050	5131.00000000
14.0050	6803.80000000	14.2350	5464.70000000
14.3800	6224.80000000	14.4000	6035.30000000
14.4100	6058.70000000	14.4250	6022.50000000
14.5150	6244.60000000	14.6450	5585.60000000
14.8350	6024.90000000	14.9800	5393.00000000
15.1950	6223.50000000	15.4350	5515.30000000
15.6350	6169.40000000	15.8500	5527.60000000

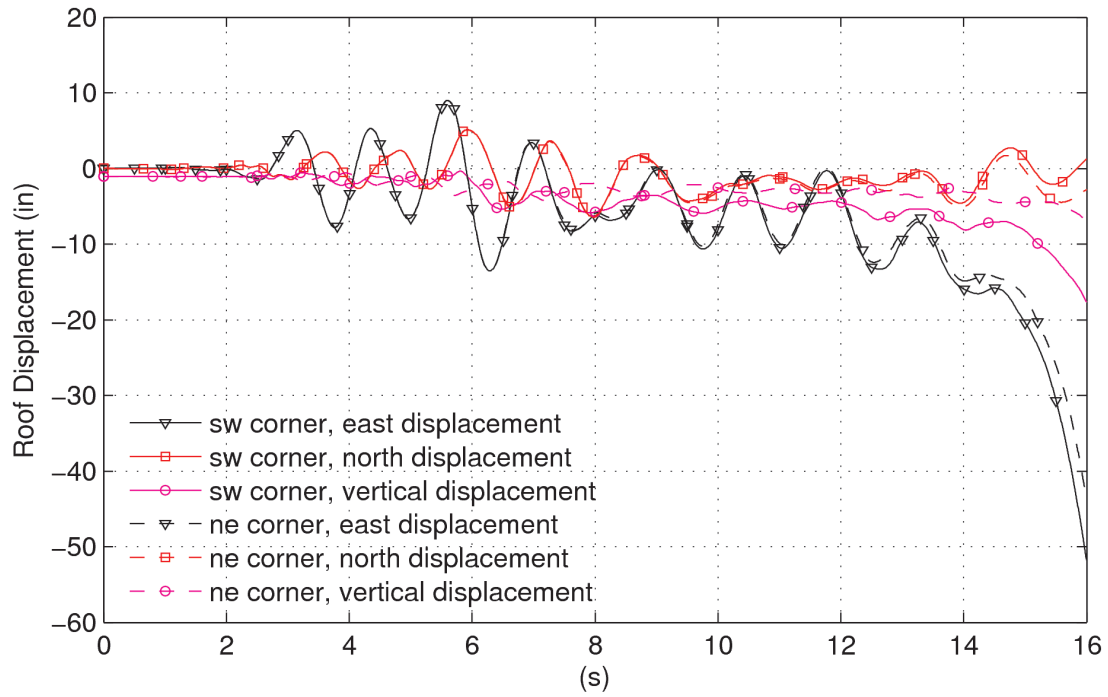


Figure 3.17: Time histories of displacement at the south-west and north-east corners of the roof of the water-tank under the Takatori ground excitation scaled down by a factor of 0.32.

Time	Maximum	Time	Minimum
0.0500	-0.00073630	0.0050	-0.00085935
0.6100	0.05874100	0.0700	-0.00082508
0.6750	0.05989800	0.6300	0.05866600
0.9450	0.07459100	0.7050	0.05947200
1.2200	0.13116000	0.9900	0.07284300
2.0000	-0.11875000	1.7850	-0.25682000
3.1500	5.01110000	2.5600	-1.44600000
4.3500	5.27410000	3.7650	-7.79540000
5.6050	8.97920000	4.9650	-6.65590000
6.9700	3.39270000	6.2900	-13.55200000
8.0200	-6.21380000	7.6350	-8.28930000
9.0250	-0.18586000	8.2450	-6.85440000
10.4250	-0.99231000	9.7550	-10.63500000
11.7750	-0.29736000	11.0450	-10.57700000
13.2650	-7.09660000	12.6300	-13.31300000
14.4950	-15.82300000	14.2300	-16.55500000

Table 3.112: Roof X displacement history at the south-west corner

Time	Maximum	Time	Minimum
0.0050	-0.00166920	0.0200	-0.00166980
0.0400	-0.00162390	0.6250	-0.04162400
0.6550	-0.04150400	1.1150	-0.13609000
1.6700	0.20759000	1.8900	0.03605400
2.2550	0.45515000	2.3950	0.15393000
2.5150	0.32176000	2.7700	-1.03640000
2.8750	-0.83020000	3.0550	-1.46400000
3.6100	2.19480000	4.1600	-2.65060000
4.8350	2.38720000	5.3200	-2.71750000
5.9250	5.09930000	6.6400	-4.94720000
7.2700	3.66840000	7.9650	-6.36020000
8.7100	1.72770000	9.5250	-4.32140000
10.2200	-2.01070000	10.3650	-2.14240000
10.8400	-0.91738000	11.6450	-2.77540000
12.2150	-1.28010000	12.6900	-2.21860000
13.3250	-0.37262000	13.9500	-4.57990000
14.7650	2.72670000	15.4500	-2.09980000

Table 3.113: Roof Y displacement history at the south-west corner

Time	Maximum	Time	Minimum
0.1100	-1.06670000	0.0050	-1.07120000
0.3500	-1.04770000	0.2150	-1.08570000
0.6600	-1.06840000	0.5000	-1.08730000
0.8700	-1.05710000	0.7400	-1.08770000
1.0500	-1.09810000	1.0300	-1.09820000
1.1150	-1.09580000	1.0700	-1.09830000
1.3300	-1.02230000	1.1800	-1.10400000
1.4650	-1.05360000	1.4500	-1.05410000
1.5750	-1.04300000	1.5100	-1.05830000
1.6850	-1.03860000	1.6200	-1.05260000
2.0650	-1.02600000	1.8900	-1.10930000
2.1950	-1.07650000	2.1800	-1.07680000
2.2700	-1.08620000	2.2550	-1.08700000
2.5850	-1.07190000	2.4500	-1.19700000
2.9150	-0.88450000	2.7300	-1.40270000
3.2300	-0.56760000	3.0400	-1.11050000
4.0550	-1.98670000	3.8750	-2.22960000
4.3700	-1.00490000	4.1000	-1.99710000
5.5650	-0.90427000	5.0850	-2.39670000
5.8150	-0.35950000	5.6450	-0.99998000
7.0750	-3.01540000	6.4850	-5.40610000
7.2600	-3.01620000	7.1650	-3.06230000
8.8100	-3.53360000	7.9150	-5.86620000
8.9800	-3.55690000	8.9350	-3.56520000
10.5000	-4.26760000	9.7550	-5.91800000
11.8600	-4.31100000	11.0750	-5.35080000
13.1750	-5.38710000	12.6050	-6.75710000
13.3550	-5.35190000	13.2100	-5.38860000
14.6600	-7.01260000	14.0350	-8.15790000

Table 3.114: Roof Z displacement history at the south-west corner

Time	Maximum	Time	Minimum
0.0500	0.00095385	0.0050	0.00083091
0.6100	0.06043600	0.0700	0.00086399
0.6750	0.06157400	0.6300	0.06034800
0.9450	0.07627500	0.7050	0.06116000
1.2200	0.13287000	0.9900	0.07455400
2.0000	-0.11704000	1.7850	-0.25511000
3.1500	5.01130000	2.5600	-1.44390000
4.3500	5.27300000	3.7650	-7.79290000
5.6050	8.97670000	4.9650	-6.65720000
6.9600	3.35560000	6.2900	-13.56300000
8.0400	-5.87380000	7.6600	-8.12790000
9.0050	0.03440100	8.3150	-6.52360000
10.4250	-0.79031000	9.7500	-10.24100000
11.7600	0.05783400	11.0550	-10.04600000
13.2950	-6.55760000	12.5400	-12.40800000
14.4050	-14.11900000	14.0200	-14.87800000

Table 3.115: Roof X displacement history at the north-east corner

Time	Maximum	Time	Minimum
0.0050	0.00447320	0.0200	0.00447260
0.0400	0.00451840	0.6300	-0.03547700
0.6550	-0.03540300	1.1150	-0.12994000
1.6700	0.21372000	1.8900	0.04224700
2.2550	0.46154000	2.3950	0.15999000
2.5150	0.32781000	2.7700	-1.02990000
2.8750	-0.82379000	3.0550	-1.45800000
3.6100	2.19980000	4.1600	-2.64180000
4.8350	2.39350000	5.3200	-2.71240000
5.9250	5.10800000	6.6450	-5.16810000
7.2650	3.54820000	7.9700	-6.47010000
8.6850	1.62210000	9.5400	-4.51060000
10.2600	-2.27080000	10.3250	-2.28080000
10.8400	-1.29180000	11.6200	-3.05010000
12.1950	-1.62050000	12.7650	-2.97450000
13.2800	-0.66658000	13.9750	-5.05450000
14.7050	1.71930000	15.5900	-4.47470000

Table 3.116: Roof Y displacement history at the north-east corner

Time	Maximum	Time	Minimum
0.1150	-1.06690000	0.0050	-1.07160000
0.3550	-1.04950000	0.2150	-1.08590000
0.6600	-1.06400000	0.4950	-1.08470000
0.8700	-1.05010000	0.7400	-1.08350000
1.1100	-1.04930000	0.9850	-1.07730000
1.3200	-1.05380000	1.2300	-1.09130000
1.5500	-1.04950000	1.4250	-1.08130000
1.8450	-1.03500000	1.7050	-1.11080000
2.1000	-1.05080000	2.0000	-1.10310000
2.4350	-0.88224000	2.2650	-1.14270000
2.7250	-0.78220000	2.5600	-1.08570000
3.0400	-1.15630000	2.9350	-1.25340000
3.6300	-0.92420000	3.2450	-1.58790000
3.9500	-0.60207000	3.7600	-1.05070000
5.1950	-0.84231000	4.4400	-2.20220000
6.2300	-2.04760000	5.7250	-3.54140000
6.5550	-1.73040000	6.3300	-2.13280000
7.8250	-1.99580000	7.1900	-4.26560000
8.0250	-1.92670000	7.9000	-2.03450000
8.7300	-3.60880000	8.6350	-3.63970000
9.5900	-2.11790000	8.9350	-3.81240000
9.6750	-2.12110000	9.6400	-2.12370000
10.9900	-2.67810000	10.4850	-3.26620000
11.2000	-2.70310000	11.1150	-2.73020000
12.3850	-2.56560000	11.7500	-3.28590000
12.7700	-2.91530000	12.6100	-3.17240000
13.0800	-3.40170000	12.9800	-3.48010000
13.8050	-2.53660000	13.2850	-3.83650000
14.9900	-4.43710000	14.7750	-4.69610000
15.3400	-4.40140000	15.1250	-4.48000000

Table 3.117: Roof Z displacement history at the north-east corner

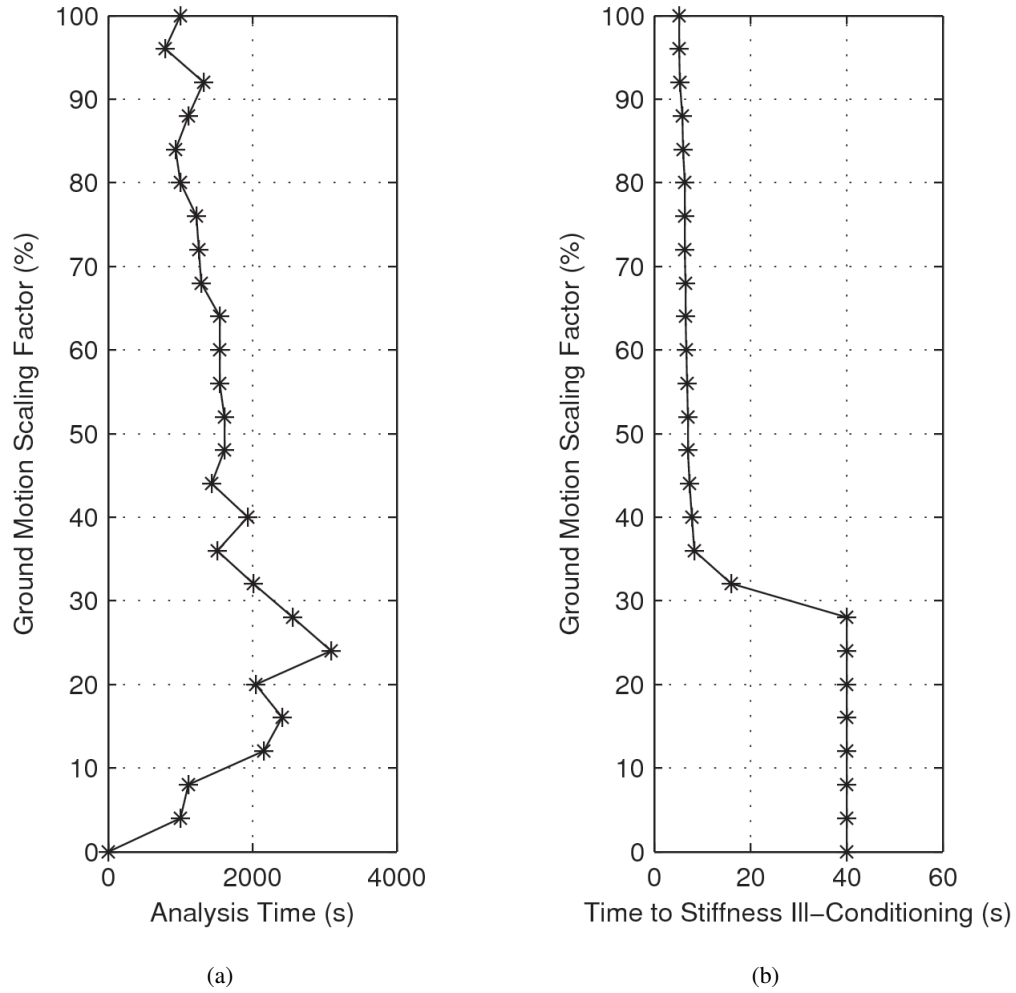


Figure 3.18: Incremental dynamic analysis of the water-tank subjected to scaled Takatori records: (a) Execution time on a single core of a Dell PowerEdge 1950 (dual quad core) with a clock-speed of 2.33GHz and 8GB RAM as a function of the ground motion scaling factor. (b) Time from the beginning of ground shaking at which stiffness ill-conditioning terminates the analysis.

Chapter 4 Conclusions

A case study of the collapse of a water-tank under earthquake loading is presented as a potential candidate for low-complexity benchmarking in the evaluation of the collapse-prediction capability of competing methodologies. The tank is so configured as to have a unique collapse mechanism under any form of ground motion. It is biaxially symmetric and is supported by a steel tower that consists of four sloping mega-columns that are tied together by five levels of vertical and horizontal bracing. The braces, columns, and beams have uniform sizing for the entire height of the tower. This configuration forces the collapse of the tank to occur due to buckling of the mega-columns and braces in the bottom segment of the steel lattice, and overturning due to the ensuing $P - \Delta$ instability. Incremental dynamic analysis is conducted on a FRAME3D model of the tank, subjected to the Takatori near-source record from the 1995 Kobe earthquake. MEF elements are used to model all the members including braces. Collapse is found to occur at the threshold scaling factor of 0.32. Severe buckling occurs in the bottom mega-columns and one of the two braces on the west face of the tower when the structure is hit by the Takatori near-source pulse, resulting a tilt in the structure. This is followed by sequential compression buckling of braces on the south and north faces leading to $P - \Delta$ instability and complete collapse of the tank. Detailed results including response histories and ordinates of the crests and troughs in the histories are provided to aid in low-complexity benchmarking.

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